

**Enduring Resources**

475 17th Street Suite 1500 Denver Colorado 80202
Telephone 303 573-1222 Fax 303 573 0461

June 24, 2005

Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P. O. Box 145801
Salt Lake City, Utah 84114-5801

Attn.: Ms. Diana Whitney

RE: Archy Bench 12-23-12-16
SWNW Sec 16 T12S-R23E
Uintah County, Utah

Dear Ms. Whitney:

Enclosed are two original applications to drill concerning the referenced proposed well. According to Enduring Resources' references, this acreage is managed by the School and Institutional Trust Lands Administration. Therefore, this information was also submitted to them.

Enduring Resources, LLC is requesting the Utah Division of Oil, Gas and Mining to hold this application and all future information as confidential.

If any questions arise or additional information is required, please contact me at 303-350-5114.

Sincerely,

Phyllis Sobotik
Regulatory Specialist

/ps

Enclosures:

xc: School and Institutional Trust Lands Administration
675 East 500 South, Suite 500
Salt Lake City, Utah 84102
Attn: Mr. Ed Bonner

RECEIVED

JUN 2 / 2005

DIV. OF OIL, GAS & MINING

**Enduring Resources, LLC
Archy Bench 12-23-12-16
SWNW Sec. 16 T12S-R23E
Uintah County, Utah
Lease # ML-48957**

Directions to Proposed Location

Directions to the proposed location are as follows:

From the intersection of U.S. Hwy 40 and 500 East Street in Vernal, Utah, proceed in an easterly then southerly direction along U.S. Hwy 40 approximately 3.3 miles to the junction of State Hwy 45. Exit right and proceed in a southerly direction along State Hwy 45, approximately 40.5 miles to the junction of Dragon Road (County B Road 4180). (This road is located approximately 4.8 miles south of Bonanza, Utah.) Exit left and proceed in a southeasterly direction along County B Road 4180, approximately 4.0 miles to the junction of Kings Wells Road (County B Road 4190). Exit right and proceed in a southwesterly direction along County B Road 4190 approximately 8.7 miles to the junction of Atchee Ridge Road (County B Road 4270). Continue along County B Road 4190 in a southwesterly direction approximately 4.3 miles to the junction of Long Draw Road (County B Road 4260). Continue along County B Road 4190 in a southerly, then westerly direction approximately 4.0 miles to the junction of County B Road 4160. Continue in a southerly direction along County B Road 4190 approximately 1.8 miles to the junction of a County D Road. Exit right and proceed in a westerly direction along the County D Road approximately 1.7 miles to the junction of a County D Road to the west. Exit left and proceed in a westerly direction along County D Road approximately 0.5 miles to the junction of a two track road to the southwest. Exit right and proceed in a southwesterly then northwesterly direction along the two track road approximately 0.5 miles to the proposed access road. Follow road flags in a westerly direction approximately 1,280 feet (0.2 miles) to the proposed location.

The proposed well site is located approximately 69.5 miles Southeasterly from Vernal, Utah.

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING



FORM 3

AMENDED REPORT ☐
(highlight changes)

001

APPLICATION FOR PERMIT TO DRILL

1A. TYPE OF WORK: DRILL <input checked="" type="checkbox"/> REENTER <input type="checkbox"/> DEEPEN <input type="checkbox"/>		5. MINERAL LEASE NO: ML-48957	6. SURFACE: State
B. TYPE OF WELL: OIL <input type="checkbox"/> GAS <input checked="" type="checkbox"/> OTHER _____ SINGLE ZONE <input checked="" type="checkbox"/> MULTIPLE ZONE <input type="checkbox"/>		7. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A	
2. NAME OF OPERATOR: Enduring Resources, LLC		8. UNIT OR CA AGREEMENT NAME: N/A	
3. ADDRESS OF OPERATOR: 475 17th St, Suite 1500 CITY Denver STATE CO ZIP 80202		PHONE NUMBER: (303) 350-5114	9. WELL NAME and NUMBER: Archy Bench 12-23-12-16
4. LOCATION OF WELL (FOOTAGES) AT SURFACE: 2084' FNL 526' FWL Sec 16 T12S R23E S.L.B.&M. AT PROPOSED PRODUCING ZONE: Same as above		10. FIELD AND POOL, OR WILDCAT: D. Springs 11. QTR/CTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: SWNW 16 12S 23E	
14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE: 69.5 miles Southeasterly from Vernal, Utah		12. COUNTY: Uintah	13. STATE: UTAH
15. DISTANCE TO NEAREST PROPERTY OR LEASE LINE (FEET) 526'	16. NUMBER OF ACRES IN LEASE: 472.50	17. NUMBER OF ACRES ASSIGNED TO THIS WELL: 40	
18. DISTANCE TO NEAREST WELL (DRILLING, COMPLETED, OR APPLIED FOR) ON THIS LEASE (FEET) 1115'	19. PROPOSED DEPTH: 6,440	20. BOND DESCRIPTION: RLB0008031	
21. ELEVATIONS (SHOW WHETHER DF, RT, GR, ETC.): 5907.4' GR Ungraded	22. APPROXIMATE DATE WORK WILL START: 12/1/2005	23. ESTIMATED DURATION: 20 days	

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	CASING SIZE, GRADE, AND WEIGHT PER FOOT	SETTING DEPTH	CEMENT TYPE, QUANTITY, YIELD, AND SLURRY WEIGHT			
12-1/4"	8-5/8" J-55 24#	2,000	65/35 Poz	462 sx	1.81	12.6 ppg
			Prem	236 sx	1.18	15.6 ppg
7-7/8"	4-1/2" N-80/I-80 11.6#	6,440	Prem Lite II	291 sx	3.38	11.0 ppg
			50/50 Poz CI G	1057 sx	1.31	14.3 ppg

ATTACHMENTS

VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES:

- | | |
|--|--|
| <input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER | <input checked="" type="checkbox"/> COMPLETE DRILLING PLAN |
| <input checked="" type="checkbox"/> EVIDENCE OF DIVISION OF WATER RIGHTS APPROVAL FOR USE OF WATER | <input type="checkbox"/> FORM 5, IF OPERATOR IS PERSON OR COMPANY OTHER THAN THE LEASE OWNER |

NAME (PLEASE PRINT) Phyllis Sobotik TITLE Regulatory Specialist
SIGNATURE *Phyllis Sobotik* DATE 6/24/2005

(This space for State use only)

API NUMBER ASSIGNED: 43-041-36797

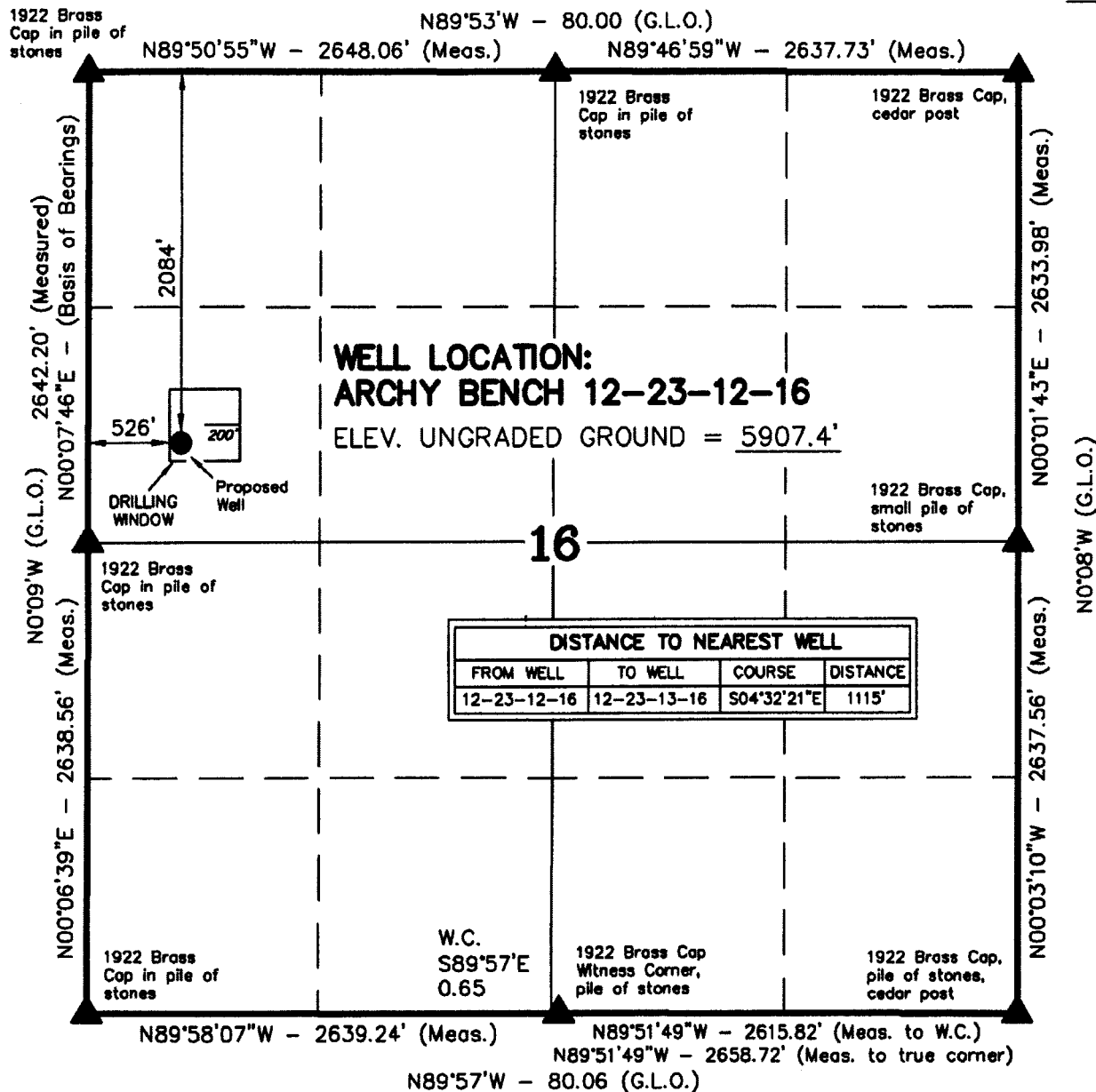
Approved by the
Utah Division of
Oil, Gas and Mining

Date: 06-25-05
By: *[Signature]*

RECEIVED
JUN 21 2005
DIV. OF OIL, GAS & MINING

T12S, R23E, S.L.B.&M.

ENDURING RESOURCES



WELL LOCATION, ARCHY BENCH
12-23-12-16, LOCATED AS SHOWN IN
THE SW 1/4 NW 1/4 OF SECTION 16,
T12S, R23E, S.L.B.&M. UTAH COUNTY,
UTAH.

NOTES:

1. Well footages are measured at right angles to the Section Lines.
2. Bearings are based on Global Positioning Satellite observations.



THIS IS TO CERTIFY THAT THE ABOVE DEED WAS
PREPARED FROM FIELD NOTES OF SURVEYS
MADE BY ME OR UNDER MY SUPERVISION AND THAT
THE SAME ARE TRUE AND CORRECT TO THE BEST OF
MY KNOWLEDGE AND BELIEF.

Kolby R. Kay

REGISTERED LAND SURVEYOR
REGISTRATION NO. 362251 OF UTAH
STATE OF UTAH

▲ = SECTION CORNERS LOCATED

BASIS OF ELEVATION IS BENCH MARK 85 EAM 1965
LOCATED IN THE NE 1/4 OF SECTION 14, T12S,
R23E, S.L.B.&M. THE ELEVATION OF THIS BENCH
MARK IS SHOWN ON THE ARCHY BENCE SE 7.5 MIN.
QUADRANGLE AS BEING 6104'.

ARCHY BENCH 12-23-12-16
(Proposed Well Head)
NAD 83 Autonomous
LATITUDE = 39° 46' 30.4"
LONGITUDE = 109° 21' 19.9"

TIMBERLINE LAND SURVEYING, INC.

38 WEST 100 NORTH. - VERNAL, UTAH 84078
(435) 789-1365

DATE SURVEYED: 5-21-05	SURVEYED BY: K.R.K.	SHEET 2 OF 10
DATE DRAWN: 6-1-05	DRAWN BY: C.B.T.	
SCALE: 1" = 1000'	Date Last Revised: 6-20-05	

CULTURAL RESOURCE INVENTORY FOR
ENDURING RESOURCES' SEVEN PROPOSED
WELL LOCATIONS, ACCESS ROUTES AND PIPELINES
(ARCHY BENCH 12-23-11-16, 12-23-12-16,
12-23-13-16, 12-23-21-16, 12-23-22-16,
12-23-31-16 AND 12-23-42-16)
NEAR BITTER CREEK IN SEC. 16, T12S, R23E,
UINTAH COUNTY, UTAH

CULTURAL RESOURCE INVENTORY FOR
ENDURING RESOURCES' SEVEN PROPOSED
WELL LOCATIONS, ACCESS ROUTES AND PIPELINES
(ARCHY BENCH 12-23-11-16, 12-23-12-16,
12-23-13-16, 12-23-21-16, 12-23-22-16,
12-23-31-16 AND 12-23-42-16)
NEAR BITTER CREEK IN SEC. 16, T12S, R23E,
UINTAH COUNTY, UTAH

By:

Todd B. Seacat

Prepared For:

State of Utah
School and Institutional Trust Lands Admin.
Salt Lake City

Prepared Under Contract With:

Enduring Resources, LLC
475 17th Street, Suite 1500
Denver, Colorado 80202

Prepared By:

Montgomery Archaeological Consultants
P.O. Box 147
Moab, Utah 84532

MOAC Report No. 05-227

23 July 2005

United States Department of Interior (FLPMA)
Permit No. 05-UT-60122

State of Utah Antiquities Project (Survey)
Permit No. U-05-MQ-00748s

ABSTRACT

In July 2005, a cultural resource inventory was conducted by Montgomery Archaeological Consultants Inc. (MOAC) for Enduring Resources' proposed seven Archy Bench wells, access routes and pipeline corridors: Archy Bench 12-23-11-16, 12-23-12-16, 12-23-13-16, 12-23-21-16, 12-23-22-16, 12-23-31-16 and 12-23-42-16. The project area occurs directly east of Bitter Creek Canyon on Archy Bench. The legal description for the project area is Township 12 South, Range 23 East, Section 16. A total of 95.5 acres were surveyed, all of which occurred on Utah School and Institutional Trust Lands Administration (SITLA) land.

The cultural resource inventory resulted in the documentation of four historic archaeological sites (42Un4877, 42Un4878, 42Un4879 and 42Un4880) which are recommended as not eligible because they are unlikely to contribute to the history of the area. Sites (42Un4877, 42Un4878 and 42Un4879) are short-term range camps which contain a restricted class of artifacts and features which retain minimal structural integrity. In addition, the sites do not appear to be associated with any particular historic event or persons. These factors coupled with no potential for subsurface remains indicate the site is unlikely to provide significant information relevant to the history of the area. Site 42Un4880 exhibits low artifact diversity, no meaningful spatial patterning, or depth potential. Hence, this site is unlikely to contribute to the historic research topics of the area.

The cultural resource inventory of Enduring Resources' seven proposed well locations with associated pipeline/access corridors resulted in the documentation of four historical sites (42Un4877, 42Un4878, 42Un4879, and 42Un4880) which are recommended not eligible for consideration to the NRHP. Based on these findings, a recommendation of "no historic properties affected" is proposed for the undertaking pursuant to Section 106, CFR 800.

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INTRODUCTION

A cultural resource inventory was conducted by Montgomery Archaeological Consultants Inc. (MOAC) in July 2005 for Enduring Resources' seven proposed well locations with associated access routes and pipelines near Bitter Creek on Archy Bench. The well locations are designated: Archy Bench 12-23-11-16, 12-23-12-16, 12-23-13-16, 12-23-21-16, 12-23-22-16, 12-23-31-16 and 11-22-24-2. The survey was implemented at the request of Ms. Phyllis Sobotik, Enduring Resources, LLC, Denver, Colorado. A total of 95.5 acres was inventoried for cultural resources on land administered by the Utah School and Institutional Trust Lands Administration (SITLA).

The objective of the inventory was to locate, document, and evaluate any cultural resources within the project area in order to comply with Section 106 of 36 CFR 800, the National Historic Preservation Act of 1966 (as amended). Also, the inventory was implemented to attain compliance with a number of federal and state mandates, including the National Environmental Policy Act of 1969, the Archaeological and Historic Conservation Act of 1972, the Archaeological Resources Protection Act of 1979, the American Indian Religious Freedom Act of 1978, and Utah State Antiquities Act of 1973 (amended 1990).

The fieldwork was performed on between 13-14 July 2005 by Todd B. Seacat (Project Archaeologist) and directed by Keith R. Montgomery (Principal Investigator) under the auspices of U.S.D.I. (FLPMA) Permit No. 05-UT-60122 and State of Utah Antiquities Permit (Survey) No. U-05-MQ-0748s issued to MOAC.

A file search was conducted by Keith R. Montgomery at the Vernal Field Office of the Bureau of Land Management on 18 July 2005. Examination of the records at Vernal indicated that in 1998 Grand River Institute inventoried several well locations for Rosewood Resources in the area finding a few archaeological sites situated outside of the current project area (Conner 1998). These sites include a Ute campsite with a collapsed wickiup (42Un2582-Eligible) and a historic livestock camp (42Un2588-Not Eligible).

DESCRIPTION OF PROJECT AREA

Enduring Resources' seven proposed Archy Bench well locations with associated access/pipeline corridors are situated east of Bitter Creek Canyon on Archy Bench, Uintah County, Utah. The legal description is Township 12 South, Range 23 East, Section 16 (Figure 1).

Table 1: Enduring Resources' Seven Proposed Archy Bench Well Locations.

Well Location	Legal Locations	Pipeline/Access	Cultural Resources
Archy Bench 12-23-11-16	NW/NW Sec. 16 T12S, R23E	Pipeline/Access: 1436 ft.	none
Archy Bench 12-23-12-16	SW/NW Sec. 16 T12S, R23E	Pipeline/Access: 1329 ft.	none
Archy Bench 12-23-13-16	NW/SW Sec. 16 T12S, R23E	Pipeline/Access: 1342 ft.	42Un4880 IF- A
Archy Bench 12-23-21-16	NE/NW Sec. 16 T12S, R23E	Pipeline/Access: 2347 ft.	none
Archy Bench 12-23-22-16	SE/NW Sec. 16 T12S, R23E	Pipeline: 2172 ft.	none
Archy Bench 12-23-31-16	NW/NE Sec. 16 T12S, R23E	Pipeline/Access: 2175 ft.	42Un4877 42Un4878
Archy Bench 12-23-42-16	SE/NE Sec. 16 T12S, R23E	Pipeline/Access: 574 ft.	42Un4879

Environment

The study area lies within the Uinta Basin physiographic unit, a distinctly bowl-shaped geologic structure (Stokes 1986:231). The Uinta Basin ecosystem is within the Green River drainage, considered to be the northernmost extension of the Colorado Plateau. The geology is comprised of Tertiary age deposits which include Paleocene and Eocene age fluvial and lacustrine sedimentary deposits. The Uinta Formation, which is predominate in the project area, occurs as eroded outcrops formed by stream laid interbedded sandstone and mudstone, and is known for its prolific paleontological localities.

Specifically, the project area is situated on a ridge between Bitter Creek on the west, the West Fork of Asphalt Wash to the northeast and an unnamed tributary canyon to Bitter Creek on the south. Surface geology consists of hard pan residual soil armored with shale and sandstone pebbles. The elevation ranges between 5800 ft and 6100 ft a.s.l. The project occurs within the Upper Sonoran, Pinon Juniper Woodland Association which includes several species such as pinyon pine, juniper, big sagebrush, greasewood, snakeweed, rabbitbrush, prickly pear cactus, and Indian ricegrass as well as other annual forbs and bunch grasses. Modern disturbances include roads, livestock grazing and oil/gas development.

Historical Overview

Archaeological evidence suggests that Numic peoples appeared in east-central Utah at approximately A.D. 1100 or shortly before the disappearance of Formative-stage peoples (Reed 1994). The archaeological remains of Numic-speaking Utes consist primarily of lithic scatters with low quantities of brown ware ceramics, rock art, and occasional wickiups. The brown ware ceramics appear to be the most reliable indicator of cultural affiliation, as Desert Side-notched and Cottonwood Triangular points were manufactured by other cultural groups beside the Ute (Horn, Reed, and Chandler 1994:130). The Ute appear to have been hunters and gatherers who exploited various fauna and flora resources. According to macrobotanical and faunal data from dated components, deer, elk, pronghorn, bison, and small game were acquired (Reed 1994:191). Plant

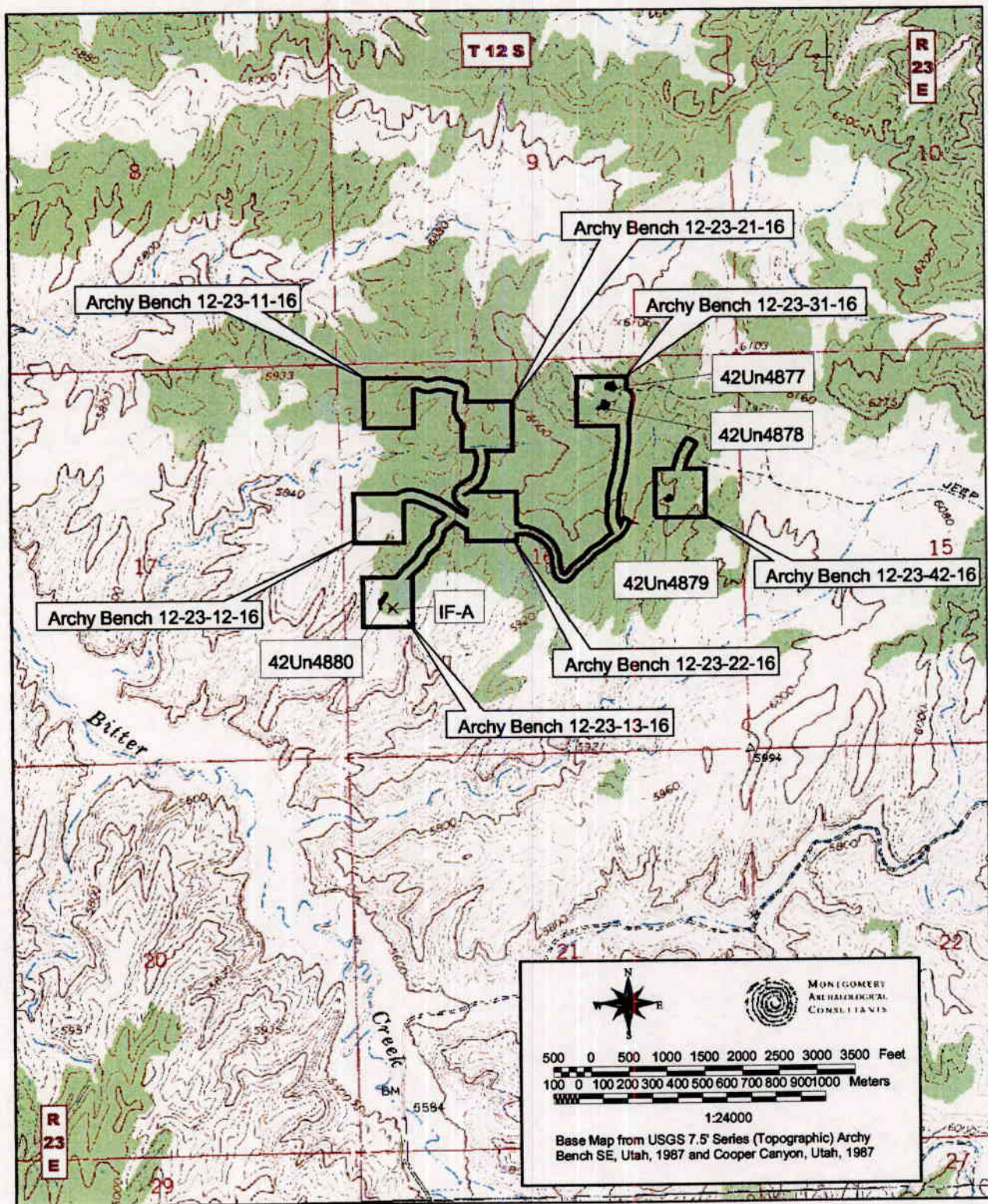


Figure 1. Inventory Area of Enduring Resources' Proposed Seven Archy Bench Well Locations, Access Routes and Pipeline Corridor near Bitter Creek in Uintah County, Utah.

materials thought to have been exploited for food include goosefoot, grass seeds, pinyon nuts, juniper berries, squawbush berries and leaves, hackberry seeds and possibly saltbush seeds, knotweed, chokecherry, and chickweed (Reed 1994:191).

On May 5, 1864 Congress passed a law confirming the 1861 executive order setting up the Uintah Reservation (Burton 1996:24). This treaty provided that the Ute people give up their land in central Utah and move within one year to the Uintah Reservation without compensation for loss of land and independence. The Uinta-ats (later called Tavaputs), PahVant, Tumpanawach, and some Cumumba and Sheberetch of Utah were gathered together at the Uintah agency during the late 1860s and early 1870s to form the Uintah Band (Burton 1996:18-19). In the 1880 treaty council the White River Utes, who had participated in the Meeker Massacre, were forced to sell all their land in Colorado and were moved under armed escort to live on the Uintah Reservation (Callaway, Janetski, and Stewart 1986:339). Shortly thereafter, 361 Uncompahgre Utes were forced to sell their lands, and were relocated to the Ouray Reservation adjacent to the southern boundary of the Uintah Reservation. This area embraced a tract of land to the east and south of the Uintah Reservation below Ouray lying east of the Green River. A separate Indian Agency was established in 1881 with headquarters at Ouray which was located across the river from where the first military post, Fort Thornburgh was located. The Department of War established Fort Thornburgh along the Green River in 1881 to maintain peace between the settlers of Ashley Valley.

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The infantry who participated in the relocation of the Colorado Indians ensured that the Uncompahgre and White River Utes remained on the two reservations (Burton 1996:28). In the late 1880s, gilsonite was discovered in the Uintah Basin, and Congress was persuaded to apportion 7,040 acres from the reservation so the mineral could be mined.

The earliest recorded visit by Europeans to Utah was the Dominguez-Escalante expedition, of 1776. From the early 1820s to 1845, the Uinta Basin became an important part of the expanding western fur trade. Homesteading began in 1878 with Thomas Smart, one of the first white settlers to settle east of Ouray. In 1879, about forty cowboys and several large herds of cattle wintered on the White River. The winter of 1879-1880 saw the establishment of a settlement near the White River by several pioneers and their families including Ephraim Ellsworth, the Remingtons, and the Campbells. The person most responsible for organizing a permanent homesteading movement in

Ouray Valley was William H. Smart, the brother of Thomas Smart, who became president of the Wasatch LDS Stake in 1901 (Burton 1998). When the Ute reservation was opened to white homesteaders in 1905, Smart organized several exploration trips into the area that later attracted many LDS families.

Initially, livestock was the main industry of white homesteaders in Uintah County. Two factors - free grass and the availability of water - influenced men to move their cattle into the county. Most of the land in the area was part of the public domain and no territory or state could tax it. Cattle were eventually brought up east as far as the Green River and then to the surrounding mountains. Large cattle herds had been coming to Brown's Park from Texas and other eastern areas since the early 1850s. The K Ranch was a large cattle operation owned by P.R. Keiser which brought many cowboys to the area. The ranch was located on the Utah-Colorado line with property in both states. Charley Hill, who came to Ashley Valley as a trapper for the Hudson Bay Company, started a cattle company on Hill Creek and Willow Creek in the Book Cliffs (Burton 1996:109). They later moved out when the government set this section aside for the Ouray Indian Agency. Other prominent men in the cattle industry included A.C. Hatch, Dan Mosby, and James McKee. Cattle rustling became an increasingly large problem as cattle herds grew, and conflict resulted between the small and large cattle companies. In 1912, the Uintah Cattle and Horse Growers Association was organized to protect the livestock industry from thieves and to issue an authorized brand book (Ibid: 110).

The sheep industry later became part of Uintah County's economic backbone, and contributed to the decline of the cattle industry. Sheep were first introduced to the valley during the winter of 1879 when Robert Bodily brought in sixty head (Burton 1996:111). Sheep were able to survive the hard winters much better than cattle. By the mid-1890s, more than 50,000 head of sheep were in the region; and the production of wool became very important. In 1897, C.S. Carter began building shearing corrals. In 1899, 500,000 pounds of wool were shipped from the county and sold for twelve and one-half cents per pound (Ibid:111). In 1906, the Uintah Railway Company built shearing pens on the Green River to encourage the shipping of wool by train; and in 1912, pens were built at Bonanza and Dragon. Beginning in the 1940's Mexican sheep-shearing crews and Greek sheepmen from the Price and Helper areas came into the area. The Taylor Grazing Act was passed in 1934, allotting specific areas or "districts" to stockmen for livestock grazing that required permits. This act was a forerunner of the Bureau of Land Management, which was established in 1946 and eventually assumed responsibility for the administration of grazing laws on public land (Burton 1996:115).

Uintah County is also known for its natural resources. Coal, copper, iron, asphalt, shale, and especially gilsonite, were important to the mining industry. When gilsonite was discovered in the Uinta Basin in the 1880s, Congress was persuaded to apportion 7,040 acres from the Ute reservation so the mineral could be mined. This area became known as "The Strip" and later developed into the townsite of Moffat (later renamed Gusher). Gilsonite is a light-weight lustrous black hydrocarbon mineral that can easily be crushed into a black-brown powder. It can be found in commercial quantities only in the Uinta Basin. The earliest use of the mineral was in buggy paints and beer-vat linings. Today it is used in over a hundred products ranging from printing inks to explosives and automobile body sealer and radiator paint (Burton 1998:343). Mining camps also sprang up near the Colorado line in Bonanza, Dragon, and Watson starting in about 1903. Many immigrants, including Greeks and Chinese, worked in the mines. Bonanza became one of the largest and most modern functioning mining camps in the area beginning in 1921 and reached its peak in 1937. It was chosen as the Barber gilsonite company headquarters, because it was near the largest deposits of gilsonite in the area. Miners from Dragon, Rainbow, and other neighboring communities were relocated to Bonanza.

SURVEY METHODOLOGY

An intensive pedestrian survey was performed for this project which is considered 100% coverage. At the proposed well location, a ten acre area centered on the center stake of the location was surveyed by the archaeologist walking parallel transects spaced no more than 10 m (30 ft) apart. The pipeline and access corridors were 100 ft wide, surveyed by walking parallel transects along the staked centerline, spaced no more than 10 m (30 ft) apart. Ground visibility was considered to be good. A total of 95.5 acres was inventoried for cultural resources on public land administered by the Bureau of Land Management (BLM), Vernal Field Office.

Archaeological sites were identified as localities with 10 or more artifacts within 20 m² area, or a feature with less than 10 artifacts in a 20 m². Isolated finds consisted of less than ten artifacts (1-9) in a 20 m² area.

INVENTORY RESULTS

The inventory of Enduring Resources' seven proposed well locations resulted in the documentation of four new archaeological sites (42Un4877, 42Un4878, 42Un4879 and 42Un4880) and one isolated occurrence of artifacts.

Archaeological Sites

<u>Smithsonian Site No.:</u>	42Un4877
<u>Temporary Site No.:</u>	05-227-03
<u>Site Type:</u>	Historic Trash Scatter
<u>Cultural Affiliation:</u>	European-American
<u>Size:</u>	59 x 43 m (1498 m ²)
<u>NRHP Eligibility:</u>	Not Eligible

Description: This is a historic temporary range camp situated on the crest of a northwest trending ridge about 2300 m east of Bitter Creek. Vegetation is dominated by pinyon and juniper with an understory of big sagebrush. The ground surface visibility was excellent ranging from 85 to 100 percent. Sediments consist of shallow, poorly sorted, coarse tan gravelly sand. All artifacts on site are in extremely poor condition; however, other impacts to the site are generally light and consist of deflation, erosion, and grazing. Cultural remains consist of about 25 tin cans, two broken bottles, and two burned rock features. The most common artifacts are open top food cans (n=10+). Other cans include seven hole-in-top milk cans, three short coffee cans, one tobacco tin, a pepper can, and two hole-in-cap food cans. Glass includes a sun-colored amethyst and marked with * MFG * partial trademark and a clear glass possible jug container. Feature A is a roughly oval shaped surface hearth comprised of tabular sandstone fragments and measures 1 m². Feature B is a stove platform constructed from several tabular sandstone slabs measuring 1 x 2 m. This site appears to be a short term camp related to livestock tending and used repeatedly over the course of several years perhaps as late as the 1960s. The earliest component appears to date between 1900-1925 based on the occurrence of sun-colored amethyst glass, tall evaporated milk cans and hole-in-cap can.

Smithsonian Site No.: 42Un4878
Temporary Site No.: 05-227-02
Site Type: Historic Trash Scatter
Cultural Affiliation: European-American
Size: 47 x 42 m (1451 m²)
NRHP Eligibility: Not Eligible

Description: This is a livestock enclosure with a trash scatter situated on the crest of a northwest trending ridge approximately 2300 m east of Bitter Creek. Vegetation is dominated by pinyon and juniper with an understory of big sagebrush. The ground surface visibility was excellent ranging from 90 to 100 percent. Sediments consist of shallow, poorly sorted, coarse gravelly tan sand. Impacts are fairly light and consist of deflation, erosion, grazing and structural decay of the brush pen/corral. Artifacts include about 50 tin cans of various types and six complete bottles. Tin cans consist of 20 open top cans, 29 hole-in-top cans (type 19), one coffee can marked with the Solitaire brand name, three sardine cans, one Prince Albert pocket tin base. The bottle consist of preserves/jelly jars manufactured by Brockway Glass Co. (1925-Present), two catsup bottles made by Owens-Illinois (1929-1954), a condiments jar marked Ball in block letters (1888-Present), and one unmarked bottle. The collapsed brush enclosure (Feature A) appears to have been a livestock pen and measures 14 x 10 ft; it contains about 5 tin cans. 42Un4878 was apparently a short term camp related to livestock tending and dates from approximately 1930-1955.

Smithsonian Site No.: 42Un4879
Temporary Site No.: 05-227-01
Site Type: Historic Trash Scatter
Cultural Affiliation: European-American
Size: 35 x 32 m (786.5 m²)
NRHP Eligibility: Not Eligible

Description: This is a dispersed trash scatter associated with a juniper kindling concentration situated on low knoll at the base of a northeast trending ridge. The vegetation is dominated by pinyon and juniper with an understory of big sagebrush, rabbitbrush, and prickly pear cactus. Ground surface visibility is good with 90 percent of the ground exposed. Sediments are shallow, poorly sorted, coarse, tan gravelly sand. Impacts to the site are relatively light consisting of deflation, erosion, and grazing. Artifacts were sparse across the site and consisted of about 22 tin cans: eight open top food cans, eight hole-in-top evaporated milk cans, a coffee can, four flat hinged-lid, tobacco tins, and a bail handle lard or peanut butter pail. These cans were associated with a concentration of juniper kindling approx 1 m² and a single juniper post. The site appears to be a short-term camp probably related to livestock tending. Temporally the site appears to date to the first half of the twentieth century perhaps between 1923 and 1940. This is based on the presence of a CANCO trademark (ca. 1923-1940s) and plain lid tobacco tins which may date before 1950.

Smithsonian Site No.: 42Un4880
Temporary Site No.: 05-227-04
Site Type: Historic Trash Scatter
Cultural Affiliation: European-American
Size: 67 x 25 m (1204 m²)
NRHP Eligibility: Not Eligible

Description: This is a historic trash scatter situated on the crest of a southwest trending ridge approximately 900 m east of Bitter Creek Canyon on Archy Bench. Vegetation is dominated by a pinyon-juniper woodland with an understory of big sagebrush, rabbitbrush and prickly pear. The ground surface visibility is excellent ranging from 90 to 100 percent. Sediment are shallow, poorly sorted, coarse, tan gravelly sand. The impacts to the site are light and consist of deflation, erosion, and grazing. Cultural materials consist exclusively of tin cans: 10 tall hole-in-top evaporated milk cans, one baking powder canister marked "Clabber Girl, Double Acting Baking Powder" (ca. 1933-1950), four No. 2 Special food cans, one No. 303 can marked with an oval, three pocket tins with flat, pin-hinged, external friction lids, one square shaker top canister, four crushed open top cans, one No. 1 East "Picnic" can, two small meat cans, and one short coffee can. No apparent features occur on site. The occurrence of tall milk cans, a Clabber Girl baking powder tin, and flat lid tobacco tins suggest the site dates to the 1930s or early 1940s. This site appears to be a short term camp related to livestock tending.

Isolated Finds

Number: IF-A
Type: Lithic Scatter
Cultural Affiliation: Unknown Prehistoric Aboriginal
Size: 20 m²

Description: This occurrence is a small scatter of eight tertiary flakes situated on the crest of a ridge east of Bitter Creek Canyon. The artifacts occur on a deflated surface consisting of very shallow, coarse, poorly sorted, gravel and sand. There is no potential for subsurface remains. The assemblage consists of six semi-translucent whitish-gray chert tertiary flakes and two black opaque chert tertiary flakes. No other artifacts, tools or material were observed.

NATIONAL OF HISTORIC PLACES EVALUATION

The National Register Criteria for Evaluation of Significance and procedures for nominating cultural resources to the National Register of Historic Places (NRHP) are outlined in 36 CFR 60.4 as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, material, workmanship, feeling, and association, and that they:

a)...are associated with events that have made a significant contribution to the broad patterns of our history; or

b)...are associated with the lives of persons significant to our past; or

c)...embody the distinctive characteristics of a type, period, or method of construction; or that represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d)...have yielded or may be likely to yield information important in prehistory or history.

The cultural resource inventory resulted in the documentation of four historic archaeological sites (42Un4877, 42Un4878, 42Un4879 and 42Un4880) which are recommended as not eligible because they are unlikely to contribute to the history of the area. Sites (42Un4877, 42Un4878 and 42Un4879) are short-term range camps which contain a restricted class of artifacts and features which retain minimal structural integrity. In addition, the sites do not appear to be associated with any particular historic event or persons. These factors coupled with no potential for subsurface remains indicate the site is unlikely to provide significant information relevant to the history of the area. Site 42Un4880 exhibits low artifact diversity, no meaningful spatial patterning, or depth potential. Hence, this site is unlikely to contribute to the historic research topics of the area.

CONCLUSIONS AND RECOMMENDATIONS

The cultural resource inventory of Enduring Resources' seven proposed well locations with associated pipeline/access corridors resulted in the documentation of four historical sites (42Un4877, 42Un4878, 42Un4879, and 42Un4880) which are recommended not eligible for consideration to the NRHP. Based on these findings, a recommendation of "no historic properties affected" is proposed for the undertaking pursuant to Section 106, CFR 800.

REFERENCES CITED

- Burton, D.K.
1996 A History of Uintah County. Scratching the Surface. Utah Centennial County History Series. Utah State Historic Society and the Uintah County Commission.
- 1998 *Settlements of Uintah County, Digging Deeper.* Uintah County Library History Series. Uintah County Library, Vernal, Utah.
- Conner, C.E.
1998 Class III Cultural Resource Inventory of Seven Rosewood Well Locations, Uintah County, Utah. Grand River Institute, Grand Junction, Utah.
- Reed A.D.
1994 The Numic Occupation of Western Colorado and Eastern Utah during the Prehistoric and Protohistoric Periods. In *Across the West: Human Population Movement and the Expansion of the Numa*, edited by D.B. Madsen and D. Rhode, pp. 188-199. University of Utah Press, Salt Lake City.
- Stokes, W.L.
1986 *Geology of Utah.* Utah Museum of Natural History and Utah Geological and Mineral Survey, Salt Lake City.

APPENDIX A:

INTERMOUNTAIN ANTIQUITY COMPUTER SYSTEM (IMACS)
SITE INVENTORY FORMS
(42Un4877-42Un4880)

On File At:

School & Institutional Trust Lands Administration
Salt Lake City, UT
and
Division of State History
Salt Lake City, UT

Paleontological Reconnaissance Report

**Enduring Resources Proposed Well Pads, Access Roads and
Pipeline Corridors for Archy Bench # 12-23-11-16, 12-23-12-16,
13-23-13-16, 12-23-21-16, 13-23-22-16, 12-23-31-16,
12-23-42-16 (Sec. 16, T 12 S, R 23 E)**

**Archy Bench SE Topographic Quadrangle
Uintah County, Utah**

July 8, 2005

Prepared by Andrew W. Stanton
Paleontologist for
Montgomery Archaeological Consultants
Box 147, 322 East 100 South
Moab, Utah 84532

INTRODUCTION

At the request of Phyllis Sobotik, of Enduring Resources, LLC, and authorized by James Kirkland of the Office of the State Paleontologist, a paleontological reconnaissance survey of Enduring's proposed well pads, access roads and pipeline corridors for "Archy Bench" # 12-23-11-16, 12-23-12-16, 13-23-13-16, 12-23-21-16, 13-23-22-16, 12-23-31-16, 12-23-42-16 (Sec. 16, T 12 S, R 23 E) was conducted by Stephen Sandau and Andrew Stanton on June 29, 2005. The survey was conducted under Utah Paleontological Investigations Permit #04-345. This survey to collect any paleontological materials discovered during the construction processes in danger of damage or destruction was done to meet requirements of the National Environmental Policy Act of 1969, and other State and Federal laws and regulations that protect paleontological resources.

FEDERAL AND STATE REQUIREMENTS

As mandated by the US Department of the Interior Bureau of Land Management, paleontologically sensitive geologic formations in BLM lands that are considered for exchange or may be impacted due to ground disturbance require paleontological evaluation. This requirement complies with:

- 1) The National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et. Seq., P.L. 91-190);
- 2) The Federal Land Policy and Management Act (FLPMA) of 1976 (90 Stat. 2743, 43 U.S.C. § 1701-1785, et. Seq., P.L. 94-579).
- 3) The National Historic preservation Act. 16 U.S.C. § 470-1, P.L. 102-575 in conjunction with 42 U.S.C. § 5320; and
- 4) The Utah Geological Survey. S. C. A.: 63-73-1. (1-21) and U.C.A.: 53B-17-603

Under policy dictated by the BLM Manual and Handbook H-8270-1 (July, 1998) formations are ranked according to their paleontological potential:

- *Condition 1* is applied to those areas known to contain fossil localities, and special consideration of the known resources is in need of evaluation.
- *Condition 2* is applied to areas that have exposures of geologic rock units known to have produced fossils elsewhere.
- *Condition 3* is applied to areas unlikely to produce fossils based on surficial geology.

Although these guidelines apply mostly to vertebrate fossils on lands under the direction of the BLM, they are equally designed to help protect rare plant and invertebrate fossils and will be used here with reference to State managed lands. It should be noted that many fossils, though common and unimpressive in and of themselves, can be important paleo-environmental, depositional, and chronostratigraphic indicators.

LOCATION

The proposed well pads, access roads and pipeline corridors for Enduring's "Archy Bench" # 12-23-11-16, 12-23-12-16, 13-23-13-16, 12-23-21-16, 13-23-22-16, 12-23-31-16, 12-23-42-16 (Sec. 16, T 12 S, R 23 E) are on land managed by the State of Utah Trust Lands Administration (SITLA), some ten miles south of the White River and twenty miles south by south west of Bonanza, Utah. The project area can be found on the Archy Bench SE 7.5 minute U. S. Geological Survey Quadrangle Map, Uintah County, Utah.

PREVIOUS WORK

The basins of western North America have long produced some of the richest fossil collections in the world. Early Cenozoic sediments are especially well represented throughout the western interior. Paleontologists started field work in Utah's Uinta Basin as early as 1870 (Betts, 1871; Marsh, 1871, 1875a, 1875b). The Uinta Basin is located in the northeastern corner of Utah and covers approximately 31,000 sq. km (12,000 sq. miles) and ranges in elevation from 1,465 to 2,130 m (4,800 to 7,000 ft) (Marsell, 1964; Hamblin et al., 1987). Middle to late Eocene time marked a period of dramatic change in the climate, flora, (Stucky, 1992), and fauna (Black and Dawson, 1966) of North America.

GEOLOGICAL AND PALEONTOLOGICAL OVERVIEW

Early in the geologic history of Utah, some 1,000 to 600 Ma, an east-west trending basin developed creating accommodation for 25,000 feet of siliclastics. Uplift of that filled-basin during the early Cenozoic formed the Uinta Mountains (Rasmussen et al., 1999). With the rise of the Uinta Mountains the asymmetrical synclinal Uinta Basin is thought to have formed through the effects of down warping in connection with the uplift. Throughout the Paleozoic and Mesozoic, deposition fluctuated between marine and non-marine environments laying down a thick succession of sediments in the area now occupied by the Uinta Basin. Portions of these beds crop out on the margins of the basin due to tectonic events occurring during the late Mesozoic.

Early Tertiary Uinta Basin sediments were deposited in alternating lacustrine and fluvial environments. Large shallow lakes periodically covered most of the basin and surrounding areas during early to mid Eocene time (Abbott, 1957). These lacustrine sediments show up in the western part of the basin, dipping 2-3 degrees to the northeast and are lost in the subsurface on the east side. The increase of cross-bedded coarse-grained sandstone and conglomerates preserved in paleo-channels indicates a transition to a fluvial environment toward the end of the epoch.

Four Eocene formations are recognized in the Uinta Basin: the Wasatch, Green River, Uinta, and Duchesne River, respectively (Wood, 1941). The Uinta Formation is subdivided into

two lithostratigraphic units namely: the Wagonhound Member (Wood, 1934), formerly known as Uinta A and B (Osborn, 1895, 1929), and the Myton Member previously regarded as the Uinta C.

Within the Uinta Basin in northeast Utah, the Uinta Formation in the western part of the basin is composed primarily of lacustrine sediments inter-fingering with over-bank deposits of silt and mudstone and westward flowing channel sands, fluvial clays, and muds in the east (Bryant et al, 1990; Ryder et al, 1976). Stratigraphic work done by early geologists and paleontologists within the Uinta Formation focused on the definition of rock units and attempted to define a distinction between early and late Uintan faunas (Riggs, 1912; Peterson and Kay, 1931; Kay 1934). More recent work focused on magnetostratigraphy, radioscopic chronology, and continental biostratigraphy (Flynn, 1986; Prothero, 1996). Well known for its fossiliferous nature and distinctive mammalian fauna of mid-Eocene Age, the Uinta Formation is the type formation for the Uintan Land Mammal Age (Wood et al, 1941).

The Duchesne River Formation of the Uinta Basin in northeastern Utah is composed of a succession of fluvial and flood plain deposits composed of mud, silt, and sandstone. The source area for these late Eocene deposits is from the Uinta Mountains indicated by paleocurrent data (Anderson and Picard, 1972). In Peterson's (1931c) paper, the name "Duchesne Formation" was applied to the formation, and it was later changed to the "Duchesne River Formation" by Kay (1934). The formation is divided up into four members: the Brennan Basin, Dry Gulch Creek, Lapoint, and Starr Flat (Anderson and Picard, 1972). Debates concerning the Duchesne River Formation, as to whether its age was late Eocene or early Oligocene, have surfaced throughout the literature of the last century (Wood et al., 1941; Scott 1945). Recent paleo-magnetostratigraphic work (Prothero, 1996) shows that the Duchesne River Formation is late Eocene in time.

FIELD METHODS

In order to determine if the proposed pipeline corridors access roads and well pads from this project contained any paleontological resources, a brief reconnaissance survey was performed. An on-site observation of the proposed areas undergoing surficial disturbance is necessary, because judgments made from topographic maps alone are often unreliable. Areas of low relief have potential to be erosional surfaces with the possibility of bearing fossil materials rather than surfaces covered by unconsolidated sediment or soils.

When found within the proposed construction areas, outcrops and erosional surfaces were checked to determine if fossils were present and to assess needs. Careful effort is made during surveys to identify and evaluate significant fossil materials or fossil horizons when they are found. Microvertebrates, although rare, are occasionally found in anthills or upon erosional surfaces, and are of particular importance.

PROJECT AREA

The project site is situated in the Evacuation Creek Member of the Green River Formation, though some of the area is composed of soil covered ground. The following list provides a description of each proposed well site.

Archy Bench #12-23-11-16

The proposed well pad is located in the NW/NW quarter-quarter section of Sec. 16, T 12 S, R 23 E, (Figure 1) and rests on soil covered ground littered with residual fragments of sandstone. The area around the well pad is vegetated with juniper and pinion pine with scattered sage brush. The proposed well pad is flanked by small dry washes. The proposed access road and pipeline corridor follow the path of an existing road that will be upgraded and then diverges into a grove of junipers. No fossils were found in the proposed construction area.

Archy Bench #12-23-12-16

The proposed well pad, located in SW/NW quarter-quarter section of Sec. 16, T 12 S, R 23 E, (Figure 1) lies of the edge of a grove of juniper and pine. The proposed well pad is on soil covered ground and the proposed access road crosses low outcrops of tan sandstone. No fossils were found in the proposed construction area.

Archy Bench #12-23-13-16

The proposed well pad lies in the NW/SW quarter-quarter section of Sec. 16, T 12 S, R 23 E, (Figure 1) and is composed of soil covered ground with residual pieces of tan sandstone littering the surface. The topography consists of rolling hills. No fossils were found in the area.

Archy Bench #12-23-21-16

The proposed well pad, located in the NE/NW quarter-quarter section of Sec. 16, T 12 S, R 23 E, (Figure 1) is composed of soil covered ground with residual sandstone, vegetated with moderately spaced juniper and pinion pine. A sandstone outcrop lies just off the northeast corner of the proposed well pad. The proposed access road follows the path of an existing road to be upgraded and then enters the proposed well pad from the southwest. No fossils were found in the proposed construction area.

Archy Bench 12-23-22-16

The proposed well pad in the SE/NW quarter-quarter section of Sec. 16, T 12 S, R 23 E, (Figure 1) lies on soil and sandstone residual covered ground with sage and widely spaced juniper. The proposed access road follows the path of an existing road that traverses soil covered ground with scattered sandstone outcrops and enters the proposed well pad from the east. No fossils were found in the area.

Archy Bench 12-23-31-16

The proposed well pad in the NW/NE quarter-quarter section of Sec. 16, T 12 S, R 23 E, (Figure 1) is in closely spaced juniper and pinion pine. The ground is covered with soil and sandstone residual. The proposed access road and pipeline is about 0.3 miles long and crosses soil covered ground with grass and low brush. No fossils were found in the proposed construction area.

Archy Bench 12-23-42-16

The proposed well in SE/NE quarter-quarter section Sec. 16, T 12 S, R 23 E, (Figure 1) lies on soil covered ground with sandstone residual. A few light brown sandstone outcrops can be found just outside the proposed well pad. The proposed access road crosses soil covered ground and enters the well pad from the north. No fossils were found in the proposed construction area.

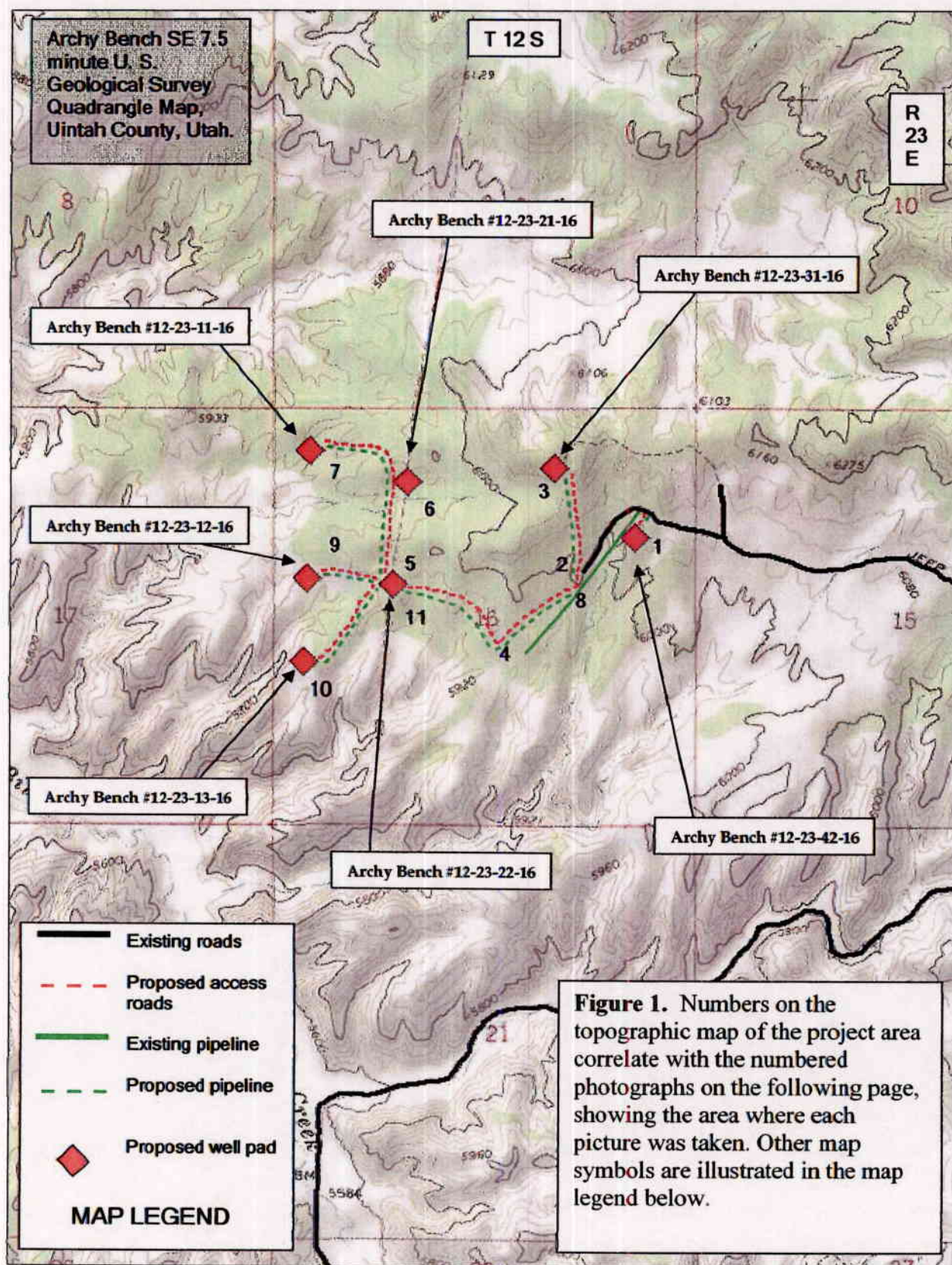
SURVEY RESULTS

WELL	GEOLOGY	PALEONTOLOGY
"Archy Bench" #12-23-11-16 (Sec. 16, T 12 S, R 23 E)	The proposed well rests on soil covered ground littered with residual fragments of sandstone. The proposed well pad is flanked by small dry washes.	No fossils were found. Condition 3.
"Archy Bench" #12-23-12-16 (Sec. 16, T 12 S, R 23 E)	The proposed well pad is on soil covered ground and the proposed access road crosses low outcrops of tan sandstone.	No fossils were found. Condition 3.
"Archy Bench" #12-23-13-16 (Sec. 16, T 12 S, R 23 E)	The proposed well pad is composed of soil covered ground with residual pieces of tan sandstone. The topography consists of rolling hills.	No fossils were found. Condition 3.
"Archy Bench" #12-23-21-16 (Sec. 16, T 12 S, R 23 E)	The proposed well pad is composed of soil covered ground with residual sandstone. A sandstone outcrop lies just off the northeast corner of the proposed well pad.	No fossils were found. Condition 3.
"Archy Bench" #12-23-22-16 (Sec. 16, T 12 S, R 23 E)	The proposed well pad lies on soil and sandstone residual covered ground. The proposed access road follows the path of an existing road that traverses soil covered ground with scattered sandstone.	No fossils were found. Condition 3.
"Archy Bench" #12-23-31-16" (Sec. 16, T 12 S, R 23 E)	The ground is covered with soil and sandstone residual. The proposed access road and pipeline is about 0.3 miles long and crosses soil covered ground.	No fossils were found. Condition 3.
"Archy Bench" #12-23-42-16" (Sec. 16, T 12 S, R 23 E)	The proposed well lies on soil covered ground with sandstone residual. A few light brown sandstone outcrops can be found just outside the proposed well pad. The proposed access road crosses soil covered ground and enters the well pad from the north.	No fossils were found. Condition 3.

RECOMMENDATIONS

The reconnaissance survey executed for Enduring's well pads, access roads and pipeline corridors for "Archy Bench" # 12-23-11-16, 12-23-12-16, 13-23-13-16, 12-23-21-16, 13-23-22-16, 12-23-31-16, 12-23-42-16 (Sec. 16, T 12 S, R 23 E) was brief. The staked areas showed no signs of fossil materials inside of the proposed construction sites. Therefore, no credible reason to limit construction within the staked areas was found.

However, if vertebrate fossil(s) are found during construction of any of the other locations covered in this report, recommendations are that a paleontologist is immediately notified in order to collect fossil materials in danger of being destroyed. Any vertebrate fossils found should be carefully moved outside of the construction areas to be checked by a permitted paleontologist.





REFERENCES CITED

- Abbott, W., 1957, Tertiary of the Uinta Basin: Intermountain Assoc. Petroleum Geologists Guidebook, Eighth Ann. Field Conf., p. 102-109.
- Anderson, D. W., and Picard, M. D., 1972, Stratigraphy of the Duchesne River Formation (Eocene-Oligocene?), Northern Uinta Basin, Northeastern Utah: Utah Geological and Mineralogical Survey Bulletin 97, p. 1-28.
- Betts, C. W., 1871, The Yale College Expedition of 1870: Harper's New Monthly Magazine, v. 43, p. 663-671.
- Black, C. C. and Dawson, M. R., 1966, A review of Late Eocene mammalian faunas from North America: American Journal of Science, v. 264, p. 321-349.
- Bryant, B., Naeser C. W., Marvin R. F., Mahnert H. H., 1989, Cretaceous and Paleogene sedimentary rocks and isotopic ages of Paleogene tuffs, Uinta Basin, Utah. And ages of Late Paleogene and Neogene tuffs and the beginning of rapid regional extension, eastern boundary of the Basin and Range Province near Salt Lake City, Utah: In: Evolution of sedimentary basins-Uinta and Piceance Basins. U. S. Geological Survey Bulletin 1787-J, K.
- Flynn, J. J., 1986, Correlation and geochronology of Middle Eocene strata from the western United States: Palaeogeographic, Palaeoclimatology, Palaeoecology v, 55, p. 335-406.
- Hamblin, A. H. and Miller, W. E., 1987, Paleogeography and paleoecology of the Myton Pocket, Uinta Basin, Utah (Uinta Formation-Upper Eocene): Brigham Young University Geology Studies, vol. 34, p 33-60.
- Kay, J. L., 1934, Tertiary formations of the Uinta Basin, Utah: Annals of Carnegie Museum, v. 23, p. 357-371.
- Marsell, R. E., 1964, Geomorphology of the Uinta Basin-a brief sketch: Thirteenth Annual Field Conference. Association of Petroleum Geologists, p.34-46.
- Marsh, O. C., 1871, On the geology of the eastern Uintah Mountains: American Journal of Science and Arts, v. 1, p. 1-8.
- 1875a, Ancient lake basins of the Rocky Mountain Region: American Journal of Science and Arts, v. 9, p. 49-52.
- 1875b, Notice of New Tertiary mammals, IV: American Journal of Science and Arts, Third Series, v. 9, p. 239-250.

- Osborn, H. F., 1895, Fossil mammals of the Uinta Beds, expedition of 1894: American Museum of Natural History Bulletin, v. 7, p. 71-106.
- 1929, The titanotheres of ancient Wyoming, Dakota and Nebraska: Monograph of the U. S. Geological Survey, v. 55, p. 1-953.
- Peterson, O. A., 1931c, New species from the Oligocene of the Uinta: Annals of Carnegie Museum, v. 21, p. 61-78.
- Peterson, O. A. and Kay, J. L., 1931, The Upper Uinta Formation of Northeastern Utah: Annals of the Carnegie Museum, v. 20, p. 293-306.
- Prothero, D. R., 1996, Magnetic stratigraphy and biostratigraphy of the Middle Eocene Uinta Formation, Uinta Basin, Utah, *in* Prothero, D. R., and Emry, R. J. editors, The terrestrial Eocene-Oligocene transition in North America, p. 3-24.
- Rasmussen, D. T., Conroy, G. C., Friscia, A. R., Townsend, K. E. and Kinkel, M. D., 1999, Mammals of the Middle Eocene Uinta Formation: Vertebrate Paleontology of Utah, p. 401-420.
- Riggs, E. S., 1912. New or little known titanotheres from the Lower Uintah Formations: Field Museum of Natural History Geological Series, v. 159, p.17-41.
- Ryder, R. T., Fouch, T. D., Elison, J. H., 1976, Early Tertiary sedimentation in the western Uinta Basin, Utah: Geological Society of America Bulletin v. 87, p. 496-512.
- Scott, W. B., 1945, The mammalia of the Duchesne River Oligocene: Transactions of the American Philosophical Society, v. 34, p. 209-253.
- Stucky, R. K., 1992, Mammalian faunas in North America of Bridgerian to Early Arikareean "Age" (Eocene and Oligocene), *in* Prothero, D. R., and Berggren, W. A., eds., Eocene-Oligocene Climatic and Biotic Evolution: Princeton University Press, p. 464-493.
- Wood, H. E., 1934, Revision of the Hyrachyidae: American Museum of Natural History Bulletin, v. 67, p. 181-295.
- and others, 1941, Nomenclature and correlation of the North America Continental Tertiary: Geol. Soc. Amer. Bull., v. 52, no. 1, Jan. 1, p. 1-48.

**Enduring Resources, LLC
Archy Bench 12-23-12-16
SWNW Sec. 16 T12S-R23E
Uintah County, Utah
Lease # ML-48957**

ONSHORE ORDER 1 - DRILLING PLAN

1. Estimated Tops of Geological Markers:

<u>Formation</u>	<u>Depth</u>
Uinta	Surface
Green River	183'
Wasatch	2659'
Mesaverde	4261'

2. Estimated Depths of Anticipated Water, Oil, Gas or Other Minerals: (5916.8' estimated KB)

Substance	Formation	Depth
	Uinta	Surface
Oil / Gas	Green River	183'
Oil /Gas	Wasatch	2659'
Oil /Gas	Mesaverde	4261'
	Estimated TD	6440'

A 12-1/4" hole will be drilled to approximately 2000 feet. The depth will be determined by the depth that the Birds Nest zone is encountered. The hole will be drilled 400 feet beyond the top of the Birds Nest zone and surface casing will be set.

3. Pressure Control Equipment: (3000 psi schematic attached)

A. Type: Eleven (11) inch double gate hydraulic BOP with eleven (11) inch annular preventer with 3,000 psi Casinghead and 3,000 psi Tubinghead equipped per the attached diagrams for 3,000 psi. BOPE as specified in *Onshore Oil & Gas Order Number 2*. A PVT, Stroke Counter and flow sensor will be installed to check for flow and monitor pit volume.

B. Pressure Rating: 3,000 psi BOPE

C. Kelly will be equipped with upper and lower Kelly valves.

D. Testing Procedure: Annular Preventer

At a minimum, the annular preventer will be pressure tested to 50% of the stack rated working pressure for a period of ten (10) minutes or until provisions of the test are met, whichever is longer.

At a minimum, the above pressure test will be performed:

1. When the annular preventer is initially installed;
2. Whenever any seal subject to test pressure is broken;
3. Following related repairs; and
4. At thirty (30) day intervals.

In addition to the above, the annular preventer will be functionally operated at least weekly.

Blow-Out Preventer

At a minimum, the BOP, choke manifold, and related equipment will be pressure tested to the approved working pressure of the BOP stack (if isolated from the surface casing by a test plug) or to 70% of the internal yield strength of the surface casing (if the BOP is not isolated from the casing by a test plug). Pressure will be maintained for a period of at least ten (10) minutes or until the requirements of the test are met, whichever is longer.

At a minimum, the above pressure test will be performed:

1. When the BOP is initially installed;
2. Whenever any seal subject to test pressure is broken;
3. Following related repairs; and
4. At thirty (30) day intervals.

In addition to the above, the pipe and blind rams will be activated each trip, but not more than once each day. All BOP drills and tests will be recorded in the IADC driller's log.

D. Miscellaneous Information:

The blowout preventer and related pressure control equipment will be installed, tested and maintained in compliance with the specifications in and requirements of *Onshore Oil & Gas Order Number 2*.

Totco directional surveys will be dropped every 2000 feet. Maximum allowable angle is 5 degrees.

4. Proposed Casing & Cementing Program:**A. Casing Program: All New**

Hole Size	Casing Size	Wt./Ft.	Grade	Joint	Depth Set (md)
20"	16"				40'
12-1/4"	8-5/8"	24#	J-55	ST&C	0 – 2,000' est
7-7/8"	4-1/2"	11.6#	N-80/I-80	LT&C	0 – 6440'

The surface casing will have guide shoe, 1 jt., insert float collar. Centralize the first 3 joints with bowspring centralizers. Thread lock guide shoe.

Casing string(s) will be pressure tested to 0.22 psi/foot of casing string length or 1500 psi, whichever is greater (not to exceed 70% of the internal yield strength of the casing), after cementing and prior to drilling out from under the casing shoe.

B. Casing Design Parameters:

Depth (md)	Casing	Collapse(psi)/SF	Burst (psi)/SF	Tension(mlbs)/SF
40	16"			
2000	8-5/8", 24#/ft, J55, STC	1370/1.53(a)	4460/4.98(b)	244/5.08(c)
6440	4-1/2", 11.6#/ft, N-80, LTC	6350/1.91 (d)	7780/2.54 (e)	223/3.47(f)

(a.) based on full evacuation with 8.6 ppg fluid on annulus

(b.) based on 8.6 ppg gradient with no fluid on annulus

(c.) based on casing string weight in 8.6 ppg mud

(d.) based on full evacuation with 10.0 ppg fluid on annulus, pipe evacuated

- (e.) based on 9.2 ppg gradient, gas to surface, with no fluid on annulus, no gas gradient.
 (f.) based on casing string weight in 9.2 ppg mud

PROPOSED CEMENTING PROGRAM

Surface Casing (if well will circulate)-Cemented to surface

CASING	SLURRY	FT. of FILL	CEMENT TYPE	SXS	EXCESS (%)	WEIGHT (ppg)	YIELD (ft ³ /sx)
8-5/8"	Lead	1500	65/35 POZ +6% Gel +10 pps gilsonite + .25 pps Flocele + 3% salt BWOW	462	35%	12.6	1.81
8-5/8"	Tail	500	Premium cmt +2% CaCl +.25 pps flocele	236	35%	15.6	1.18

A cement top job is required if cement fallback is greater than 10' below ground level. Top job cement will be premium cement w/2% CaCl. Volume as required.

Surface Casing (if well will not circulate)-Cemented to surface

CASING	SLURRY	FT. of FILL	CEMENT TYPE	SXS	EXCESS (%)	WEIGHT (ppg)	YIELD (ft ³ /sx)
8-5/8"	Lead	500	Premium cmt + 2% CaCl +.25 pps flocele	280	60	15.6	1.18
8-5/8"	Top job	As req.	Premium cement + 2% CaCl	Req.		15.6	1.18

Production Casing and Liner-Cemented TD to Surface

CASING	SLURRY	FT. of FILL	CEMENT TYPE	SXS	EXCESS (%)	WEIGHT (ppg)	YIELD (ft ³ /sx)
4-1/2"	Lead	2540	Premium Lite II +3% KCL +0.25 pps celloflake +5 pps gilsonite +10% gel +0.5% extender	291	60	11.0	3.38
4-1/2"	Tail	3900	50/50 POZ Class G +10% salt + 2% gel + 1% R-3	1057	60	14.3	1.31

Cement volumes for the 4-1/2" Production Casing will be calculated to provide a top of cement to surface. Cement volumes are approximate and were calculated under the assumption that a gauge hole will be achieved. Actual cement volumes may vary due to variations in the actual hole size and will be determined by running a caliper log on the drilled hole.

All waiting on cement (WOC) times will be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

5. Drilling Fluids (mud) Program:

Interval	Mud Weight	Fluid Loss	Viscosity	Mud Type
0' – 2000'		No cntrl		Air/mist
2000'-3000'	8.4-8.6	No cntrl	28-36	Water
3000'-6440'	8.8-10.2	8 - 10 ml	32-42	Water/Gel

Sufficient mud material(s) to maintain mud properties, control lost circulation and contain a blowout will be available at the well site during drilling operations.

6. Evaluation Program:

Tests: No tests are currently planned.

Coring: No cores are currently planned.

Samples: None

Logging: Dual Induction – SFL /Gamma Ray Caliper: TD to Base Surface Casing
 Compensated Neutron/Litho Density Temperature/Gamma Ray: TD to Base Surface Casing
 Cement Bond Log / Gamma Ray: PBTD to Top of Cement

Stimulation: A stimulation or frac treatment will be designed for completion of this well based on openhole log analysis. The drill site, as approved, will be sufficient size to accommodate all completion activities.

7. Abnormal Conditions:

No abnormal temperatures or pressures are anticipated. No H₂S has been encountered or known to exist from previous wells drilled to similar depths in the general area.

Maximum anticipated bottom hole pressure equals approximately 3348 psi (calculated at 0.52 max psi/foot of hole) and maximum anticipated surface pressure equals approximately 1932 psi (anticipated bottom hole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/foot of hole).

8. Anticipated Starting Dates:

Anticipated Commencement Date- December 1, 2005
 Drilling Days- Approximately 10 days
 Completion Days - Approximately 10 days
 Anticipate location construction within 30 days of permit issue.

9. Variances:

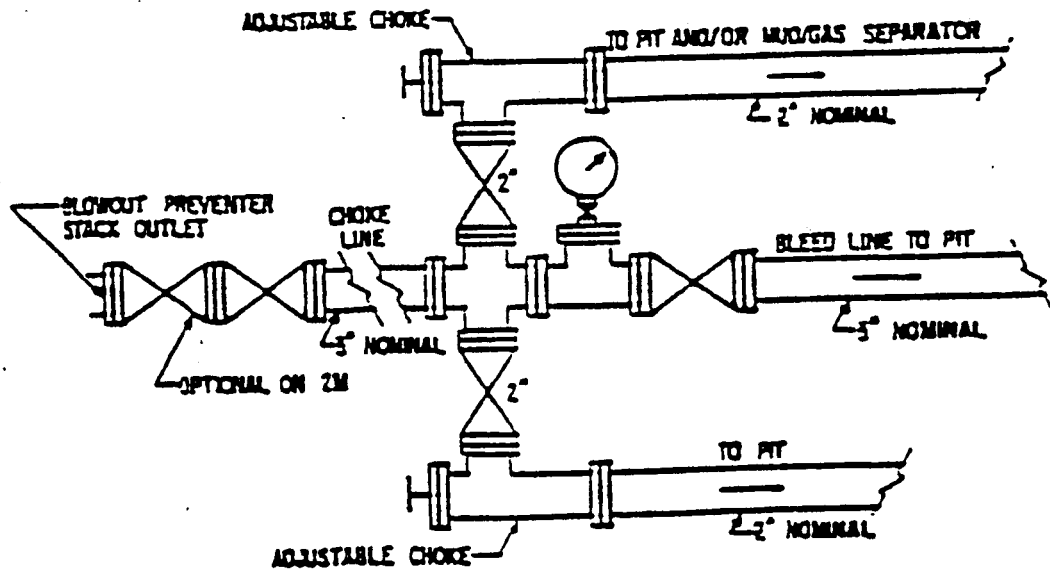
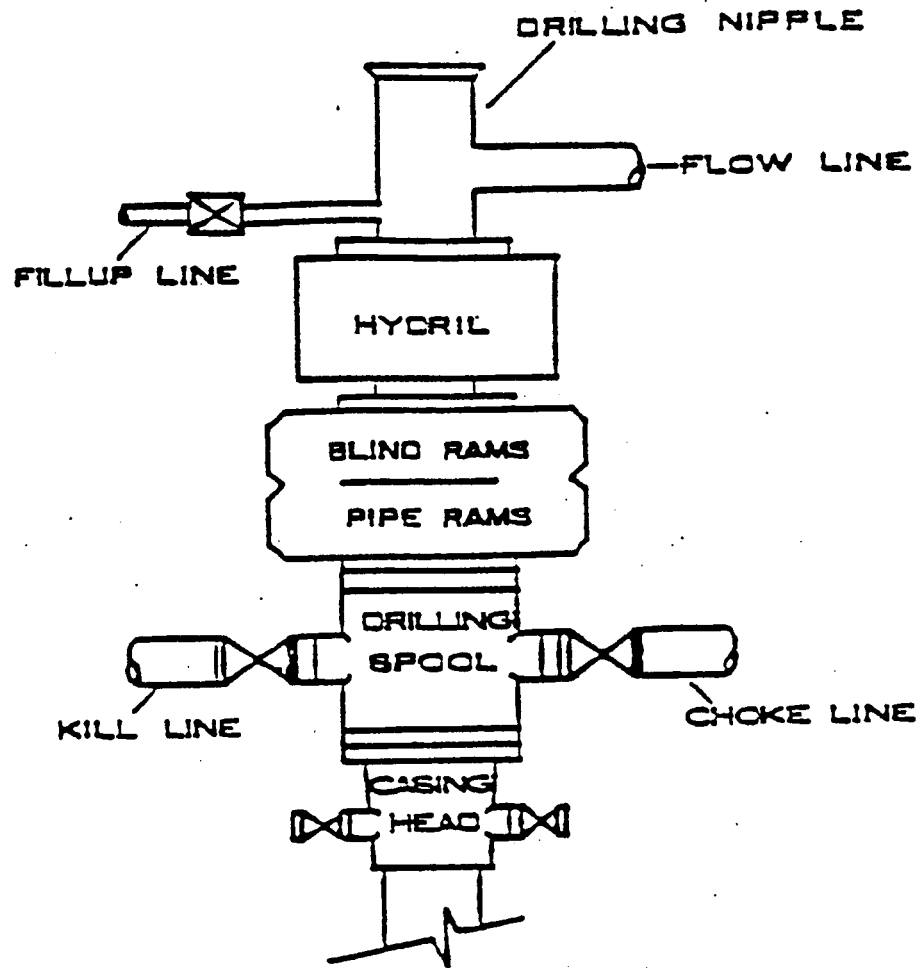
None anticipated

10. Other:

A Cultural Resource Inventory and Paleontology reconnaissance shall be conducted for the well location, access route and pipeline. The reports shall be submitted to the Division of Oil, Gas and Mining and to the School and Institutional Trust Lands Administration upon their receipt.

3,000 PSI

EOP STACK



**Enduring Resources, LLC
Archy Bench 12-23-12-16
SWNW Sec. 16 T12S-R23E
Uintah County, Utah
Lease # ML-48957**

MULTI-POINT SURFACE USE & OPERATIONS PLAN

1. Existing Roads:

Directions to the proposed location are as follows:

From the intersection of U.S. Hwy 40 and 500 East Street in Vernal, Utah, proceed in an easterly then southerly direction along U.S. Hwy 40 approximately 3.3 miles to the junction of State Hwy 45. Exit right and proceed in a southerly direction along State Hwy 45, approximately 40.5 miles to the junction of Dragon Road (County B Road 4180). (This road is located approximately 4.8 miles south of Bonanza, Utah.) Exit left and proceed in a southeasterly direction along County B Road 4180, approximately 4.0 miles to the junction of Kings Wells Road (County B Road 4190). Exit right and proceed in a southwesterly direction along County B Road 4190 approximately 8.7 miles to the junction of Atchee Ridge Road (County B Road 4270). Continue along County B Road 4190 in a southwesterly direction approximately 4.3 miles to the junction of Long Draw Road (County B Road 4260). Continue along County B Road 4190 in a southerly, then westerly direction approximately 4.0 miles to the junction of County B Road 4160. Continue in a southerly direction along County B Road 4190 approximately 1.8 miles to the junction of a County D Road. Exit right and proceed in a westerly direction along the County D Road approximately 1.7 miles to the junction of a County D Road to the west. Exit left and proceed in a westerly direction along County D Road approximately 0.5 miles to the junction of a two track road to the southwest. Exit right and proceed in a southwesterly then northwesterly direction along the two track road approximately 0.5 miles to the proposed access road. Follow road flags in a westerly direction approximately 1,280 feet (0.2 miles) to the proposed location.

The proposed well site is located approximately 69.5 miles Southeasterly from Vernal, Utah. Refer to attached Topographic Map "A" and "B"

All existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.

2. Planned Access Roads:

The proposed access road will be approximately 1,280 feet (0.2 miles) of new construction entering the location from the upgraded two track access road. Approximately 2,752 feet (0.5 miles) of an existing two track road will require upgrading. Rerouting of approximately 540 feet (0.1 miles) of the 0.5 miles of two track may be necessary. The proposed access road utilizes approximately 2.2 miles of an existing County D road requiring no new construction or upgrades. Please refer to Topo Map "B".

The access road will be crowned 2% to 3%, ditched and constructed with a running surface of 18 feet and a maximum disturbed width of 30 feet right-of-way. Maximum grade of road is 5% or less. Graveling or capping the roadbed will be performed as necessary to provide a well constructed, safe road. No fence crossings, culverts, turnouts, cattle guards or major cuts and fills are expected to be required. Prior to construction or upgrading, the proposed road shall be cleared of any snow and allowed to dry completely.

Surface disturbance and vehicular traffic will be limited to the proposed location and proposed access route. Any additional area needed will be approved in advance. All construction shall be in conformance with the standards outlined in the BLM and Forest Service publication: Surface Operating Standards for Oil and Gas Exploration and Development. 1989.

The road surface and shoulders will be kept in a safe usable condition and will be maintained in accordance with the original construction standards. All drainage ditches will be kept clear and free flowing and will be maintained according to original construction standards. The access road surface will be kept free of trash during operations. All traffic will be confined to the approved disturbed surface. Road drainage crossings shall be designed so they will not cause siltation or accumulation of debris in the drainage crossing nor shall the drainages be blocked by the road bed. Erosion of drainage ditches by runoff water shall be prevented by diverting water off at frequent intervals by means of cutouts. Upgrading shall not be allowed during muddy conditions. Should mud holes develop, they shall be filled in and detours around them avoided. When snow is removed from the road during the winter months, the snow shall be pushed outside of the borrow ditches and the turnouts kept clear so that snowmelt will be channeled away from the road.

3. **Location of Existing Wells Within a One Mile Radius:** Please refer to Topographic Map "C"

There are no known producing wells, temporarily abandoned wells, water wells, disposal wells, monitoring or observation wells, or injection wells located within a one (1) mile radius of the proposed location.

There are three known shut in wells - DWR #14-16 SESW Sec 16 T12S-R23E
- DWR #15-16 SWSE Sec 16 T12S-R23E
- DWR #16-16 SESE Sec 16 T12S-R23E

There are two known plugged and abandoned wells – Hanging Rock I #9-11 NESW Sec 9 T12S-R23E
- State M #32-16 SWNE Sec 16 T12S-R23E

There may be drilling activity or permitted wells within in the area.

4. **Location of Existing &/or Proposed Facilities:**

All production facilities will be located on the disturbed portion of the well pad and at a minimum of 25 feet from the toe of the back slope or the top of the fill slope. Refer to Sheet #6.

A dike will be constructed completely around those production facilities which contain fluids (i.e. production tanks, produced water tanks and/or heater treater.) These dikes will be constructed of compacted subsoil, be impervious, hold 100% of the capacity of the largest tank and be independent of the back cut.

All permanent (on site for six months or longer) above the ground structures constructed or installed, including pumping units, will be painted a flat, non-reflective, earth tone color to match one of the standard environmental colors, as determined by the Rocky Mountain Five State Inter-Agency Committee.

All facilities will be painted within 6 months of installation. The color shall be Carlsbad Canyon (2.5Y 6/2). Facilities required to comply with the Occupational Safety and Health Act (OSHA) will be excluded.

Any necessary pits will be properly fenced to protect livestock and prevent wildlife entry.

If the well is capable of economic production, a surface gas gathering line and related equipment shall be installed. The gas gathering line shall be in use year round. Approximately 1,280 feet (0.2 miles) of 6 inch or less diameter steel, unpainted, welded gas gathering line is proposed to be laid. The proposed line shall begin at the well site and go in an easterly direction being laid alongside the proposed access road to tie into the gathering line installed to transport gas from the Archy Bench #12-23-21-16 well. This line then ties into the gathering line from the Archy Bench #12-23-22-16 well which ties into an existing pipeline located in the easterly portion of Sec. 16 T12S-R23E. The proposed gathering line shall be placed above ground. The line will be welded together and pulled from the well site location and tie-in point when practical; however, it may be necessary to utilize the access road for welding of the line. The line will then be boomed off to the side of the road. The gas meter run will be located within 500 feet of the wellhead. The meter run will be housed. The

gas gathering line will be buried or anchored down from the wellhead to the meter. Please refer to the attached Topographic Map "D".

Upon plugging and abandonment, the gas gathering line will be removed and the disturbed area will be re-contoured and restored as near as practical to the original condition. If necessary, re-seeding operations will be performed after completion of other reclamation operations. The appropriate surface management agency will be contacted for the required seed mixture and seeding dates.

5. Location and Type of Water Supply:

Water will be obtained from the White River by Tu and Frum, Inc. Water User Claim #49-2185, Application #T75517, or by Target Trucking Water User Claim #43-2195, or by Dalbo Inc. Water User Claim #43-8496.

Water will be hauled to the location over the roads marked on Topographic Maps "A" and "B".

No water well is to be drilled on this lease.

6. Source of Construction Materials:

Surface and subsoil materials in the immediate area will be utilized for location and access road construction.

Any gravel will be obtained from a commercial source; however, gravel sized rock debris associated with location and access road construction may be used as access road surfacing material.

7. Methods of Handling Waste Materials:

Drill cuttings will be contained and buried in the reserve pit.

Drilling fluids, including salts and chemicals, will be contained in the reserve pit. Upon termination of drilling and completion operations, the liquid contents of the reserve pit will be removed and disposed of at an approved waste disposal facility within 120 days after drilling is terminated.

The reserve pit will be constructed on the location and will not be located within natural drainage, where a flood hazard exists or surface runoff will destroy or damage the pit walls. The reserve pit will be constructed so that it will not leak, break or allow discharge of liquids.

A plastic reinforced liner is to be used. It will be a minimum of 12 mil thick and felt with sufficient bedding used to cover any rocks. The liner will overlap the pit walls and be covered with dirt and/or rocks to hold it in place. No trash or scrap that could puncture the liner will be disposed of in the pit.

Any spills of oil, salt water or other noxious fluids will be immediately cleaned up and removed to an approved disposal site.

A chemical portable toilet will be furnished with the drilling rig. The toilet will be replaced periodically utilizing a licensed contractor to transport by truck the portable chemical toilet so that its contents can be delivered to the Vernal Wastewater Treatment Facility in accordance with state and county regulations.

Garbage, trash and other waste materials will be collected in a portable, self-contained, fully enclosed trash cage during operations. No trash will be burned on location.

All debris and other waste material not contained in the trash cage will be cleaned up and removed from the location immediately after removal of the drilling rig.

Any open pits will be fenced during the operations. The fencing will be maintained until such time as the pits are backfilled.

No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount greater than 10,000 pounds will be used, produced, stored, transported or disposed of annually in association with the drilling, completion or testing of this well. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported or disposed of in association with the drilling, completion or testing of this well.

Produced oil will be stored in an oil tank and then hauled by truck to a crude purchaser facility. Any produced water from the proposed well will be contained in a water tank and will then be hauled by truck to an approved disposal site.

8. Ancillary Facilities:

During drilling operations, approximately 20 days, the site will be a manned camp. Three or four additional trailers will be on location to serve as the crew's housing and eating facility. These will be located on the perimeter of the pad site within the topsoil stockpiles. Refer to Sheet #5.

9. Well Site Layout: (Refer to Sheet #3, #4 & #5)

The attached Location Layout Diagrams describes drill pad cross-sections, cuts and fills and locations of the mud tanks, reserve pit, flare pit, pipe racks, trailer parking, spoil dirt stockpile(s) and surface material stockpiles(s).

Please see the attached diagram for rig orientation and access roads.

All pits shall be fenced to the following minimum standards:

39 inch net wire shall be used with at least one strand of barbed wire on top of the net wire. Barbed wire is not necessary if pipe or some type of reinforcement rod is attached to the top of the entire fence.

The net wire shall be no more than 2 inches above the ground. The barbed wire shall be 3 inches over the net wire. Total height of the fence shall be at least 42 inches.

Corner posts shall be cemented and/or braced in such a manner to keep the fence tight at all times.

Standard steel, wood or pipe posts shall be used between the corner braces. Maximum distance between any two fence posts shall be no greater than 16 feet.

All wire shall be stretched by, using a stretching device, before it is attached to corner posts.

The reserve pit fencing will be on three sides during drilling operations and on the fourth side when the rig moves off location. Pits will be fenced and maintained until cleanup.

Location size may change prior to drilling the well due to the current rig availability. If the proposed location is not large enough to accommodate the drilling rig, the location will be re-surveyed and a Form 9 will be submitted.

10. Plans for Surface Reclamation:

Producing Location:

Immediately upon well completion, the location and surrounding area will be cleared of all unused tubing, equipment, materials, trash and debris not required for production.

Immediately upon well completion, any hydrocarbons in the pit shall be removed in accordance with 40 CFR 3162.7.

Before any dirt work associated with location restoration takes place, the reserve pit shall be as dry as possible. All debris in it will be removed. Other waste and spoil materials will be disposed of immediately upon completion of operations.

The reserve pit and that portion of the location not needed for production facilities/operations will be re-contoured to the approximate natural contours. The reserve pit will be reclaimed within 90 days from the date of well completion, weather permitting.

To prevent surface water(s) from standing (ponding) on the reclaimed reserve pit area, final reclamation of the reserve pit will consist of "mounding" the surface 3 feet above surrounding ground surface to allow the reclaimed pit area to drain effectively.

Upon completion of backfilling, leveling and re-contouring, the stockpiled topsoil will be spread evenly over the reclaimed area(s).

The Operator will control noxious weeds along Rights-Of-Way for roads, pipelines, well sites or other applicable facilities.

Dry Hole / Abandoned Location:

Abandoned well sites, roads and other disturbed areas will be restored as near as practical to their original condition. Where applicable, these conditions include the re-establishment of irrigation systems, the re-establishment of appropriate soil conditions and re-establishment of vegetation as specified.

All disturbed surfaces will be re-contoured to the approximate natural contours with reclamation of the well pad and access road to be performed as soon as practical after final abandonment. If necessary, re-seeding operations will be performed after completion of other reclamation operations.

Seed Mixture:

The appropriate surface management agency will be contacted for the required seed mixture and seeding dates.

11. **Surface Ownership: Location, Access Road & Pipeline**
School and Institutional Trust Lands Administration
675 East 500 South, Suite 500
Salt Lake City, Utah 84102
Attn: Mr. Ed Bonner

12. **Other Information:**

Wildlife Stipulations: Wildlife stipulations and possible activity restrictions will be detailed in the "Conditions of Approval" received with an approved Permit to Drill. Operator will comply with these wildlife stipulations.

Archeology: A Cultural Resource Inventory shall be conducted for the well location, access route and pipeline. The report shall be submitted to the Division of Oil, Gas and Mining and the School and Institutional Trust Lands Administration upon its receipt.

Paleontology: A Paleontology reconnaissance shall be conducted for the well location, access route and pipeline. The report shall be submitted to the Division of Oil, Gas and Mining and the School and Institutional Trust Lands Administration upon its receipt.

If, during operations, any archaeological or historical sites, or any objects of antiquity (subject to the Antiquities Act of June 8, 1906) are discovered, all operations which would affect such sites will be suspended and the discovery reported promptly to the surface management agency.

All lease operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations, the approved Plan of Operations and any applicable Notice to Lessees. The Operator will be fully responsible for the actions of its subcontractors. A complete copy of the approved "Application for Permit to Drill" will be furnished to the field representative(s) to ensure compliance and shall be on location during all construction and drilling operations.

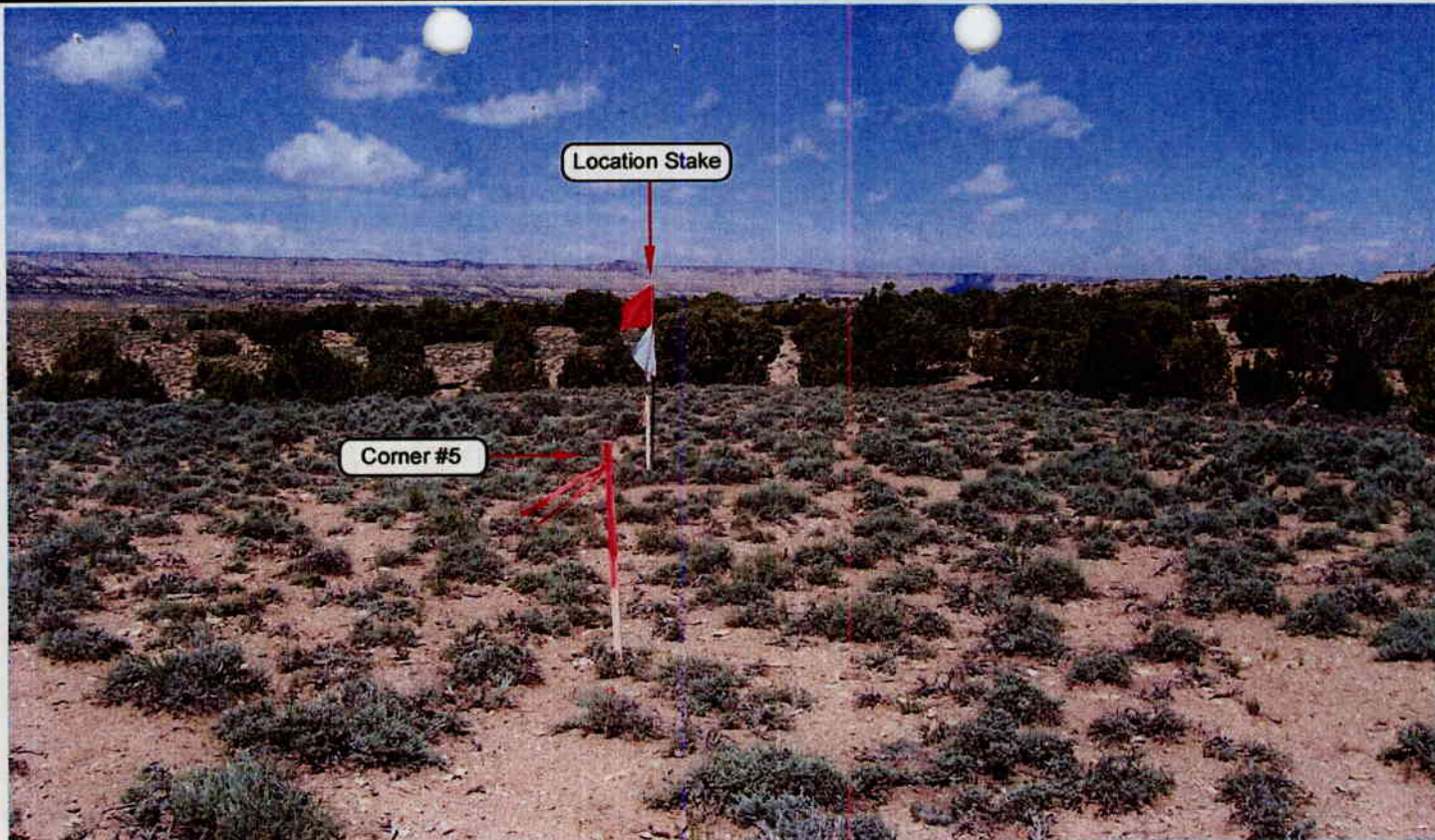


PHOTO VIEW: FROM CORNER #5 TO LOCATION STAKE

CAMERA ANGLE: NORTHWESTERLY



PHOTO VIEW: FROM BEGINNING OF PROPOSED ROAD

CAMERA ANGLE: WESTERLY

ENDURING RESOURCES

Archy Bench 12-23-12-16
SECTION 16, T12S, R23E, S.L.B.&M.
2084' FNL & 526' FWL

LOCATION PHOTOS

TAKEN BY: K.R.K.

DRAWN BY: T.D.H.

DATE TAKEN: 05-21-05

DATE DRAWN: 06-03-05

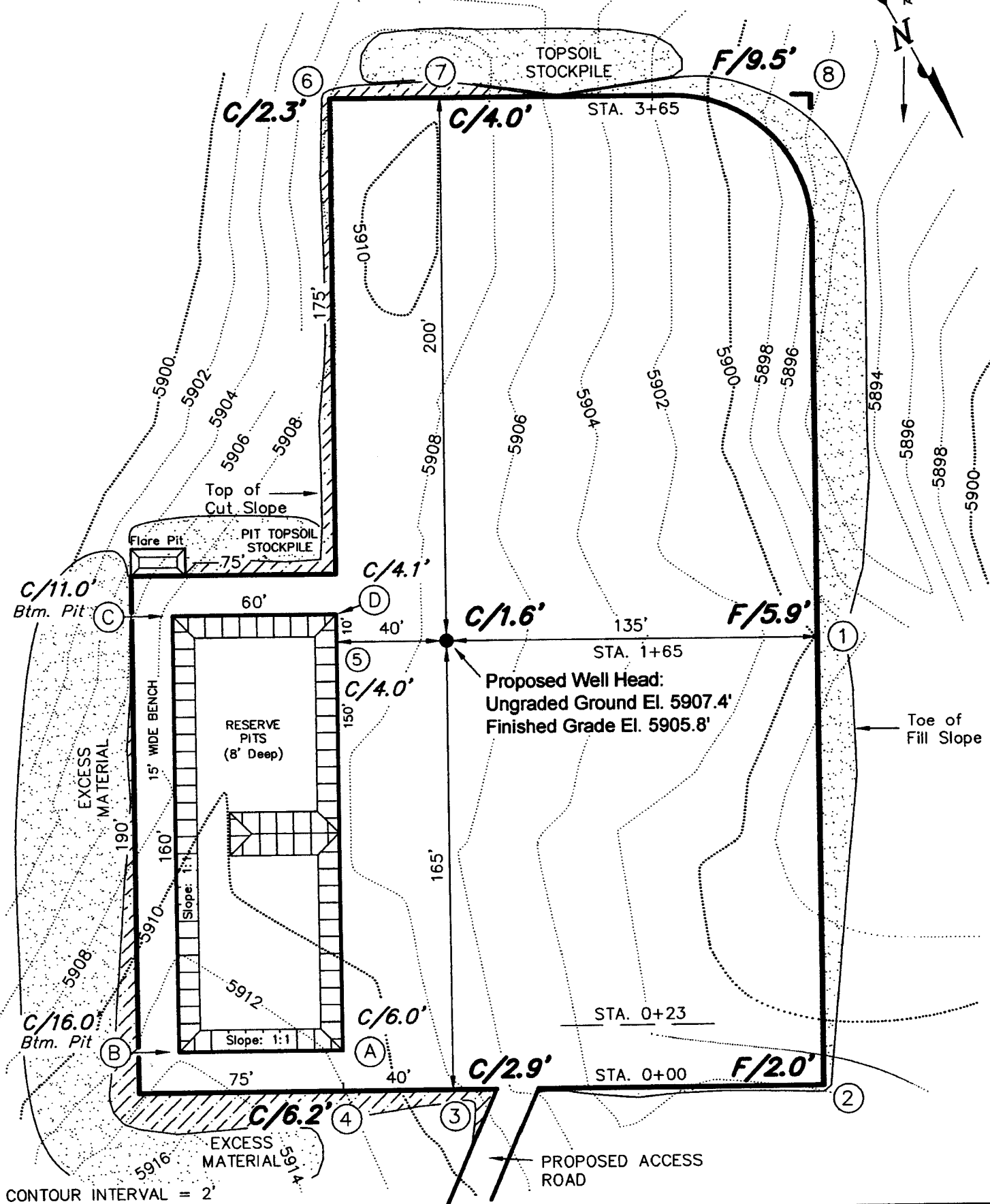
REVISED:

Timberline Land Surveying, Inc.
 38 West 100 North Vernal, Utah 84078
 (435) 789-1365

SHEET
1
OF 10

ENDURING RESOURCE

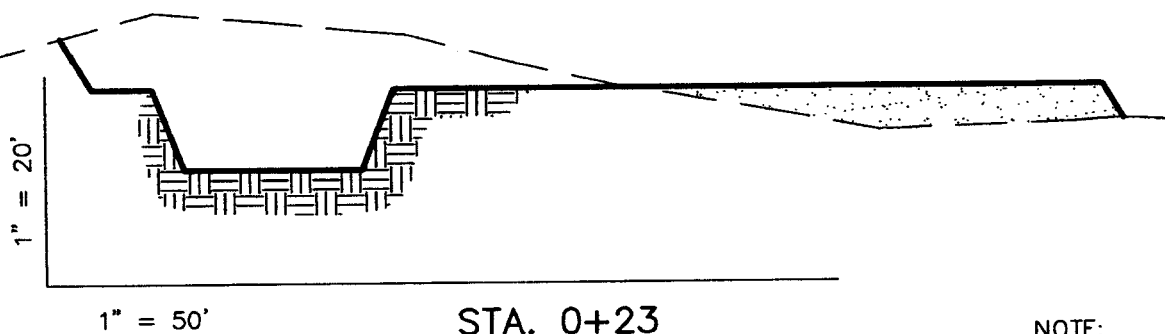
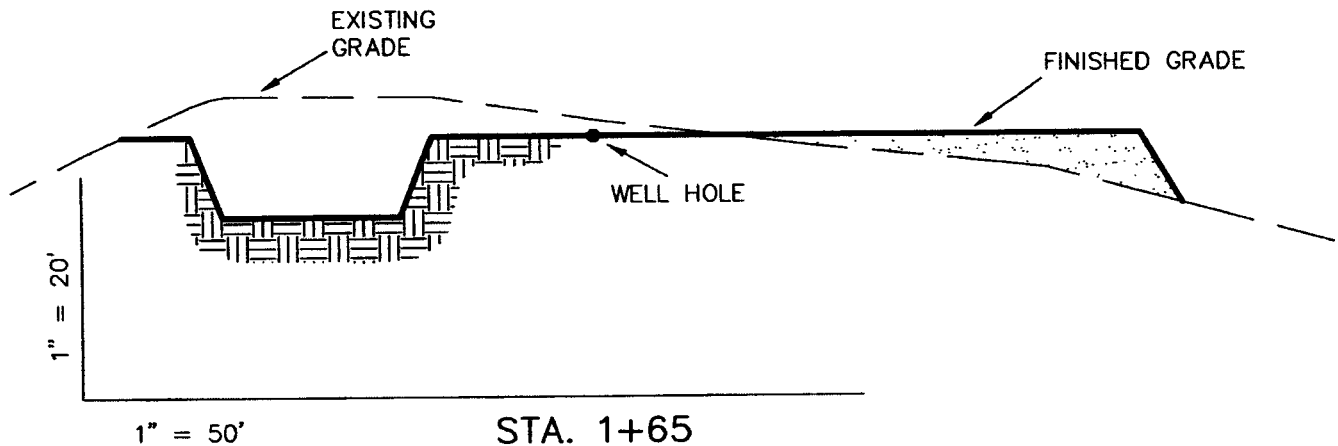
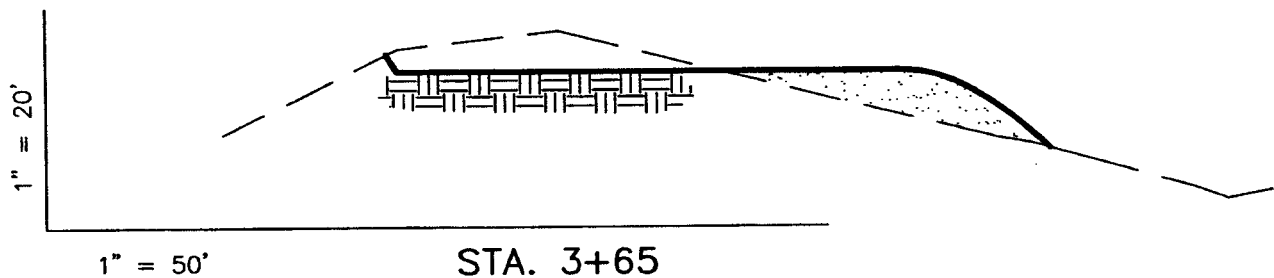
CUT SHEET - ARCHY BENCH 12-23-12-16



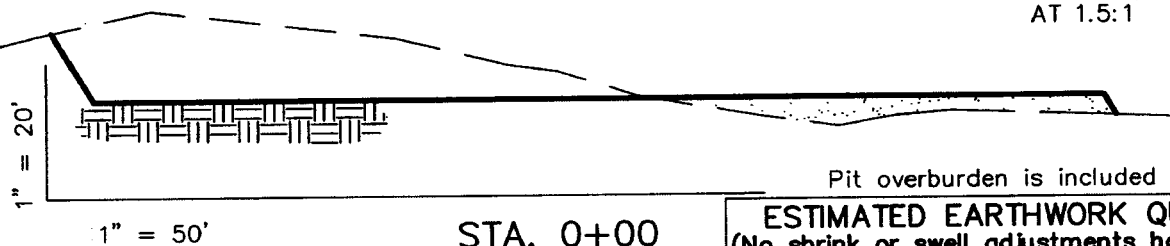
Section 16, T12S, R23E, S.L.B.&M.		Qtr/Qtr Location: SW NW		Footage Location: 2084' FNL 526' FWL	
Date Surveyed: 5-21-05	Date Drawn: 6-1-05	Date Last Revision:		<i>Timberline</i> (435) 789-1365 <i>Land Surveying, Inc.</i> 38 WEST 100 NORTH VERNAL, UTAH 84078	SHEET 3 OF 10
Surveyed By: K.R.K.	Drawn By: C.B.T.	Scale: 1" = 50'			

ENDURING RESOURCES

CROSS SECTIONS - ARCHY BENCH 12-23-12-16



NOTE:
UNLESS OTHERWISE NOTED
ALL CUT/FILL SLOPES ARE
AT 1.5:1



Pit overburden is included in pad cut.

REFERENCE POINTS

185' Northwesterly	5894.5'
235' Northwesterly	5901.3'
215' Northeasterly	5911.2'
265' Northeasterly	5911.1'

ESTIMATED EARTHWORK QUANTITIES (No shrink or swell adjustments have been used) (Expressed in Cubic Yards)

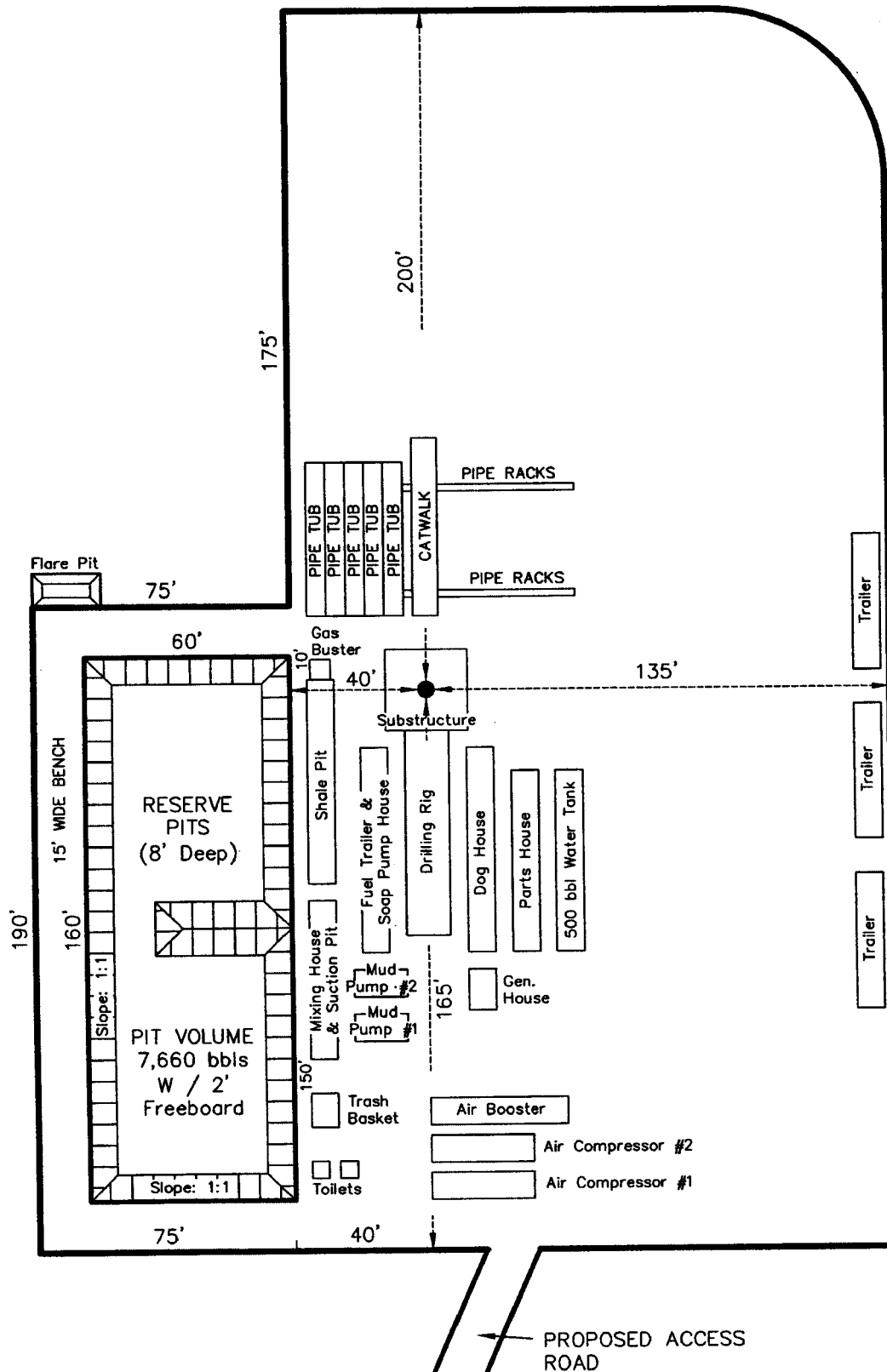
ITEM	CUT	FILL	6" TOPSOIL	EXCESS
PAD	6,180	7,310	Topsoil is not included in Pad Cut	-1,130
PIT	2,270	0		2,270
TOTALS	8,450	7,310	1,450	1,140

Excess Material after Pit Rehabilitation = 0 Cu. Yds.

Section 16, T12S, R23E, S.L.B.&M.		Qtr/Qtr Location: SW NW	Footage Location: 2084' FNL 526' FWL
Date Surveyed: 5-21-05	Date Drawn: 6-1-05	Date Last Revision:	Timberline (435) 789-1365 Land Surveying, Inc. 38 WEST 100 NORTH VERNAL, UTAH 84078
Surveyed By: K.R.K.	Drawn By: C.B.T.	Scale: 1" = 50'	
			SHEET 4 OF 10

DURING RESOURCE

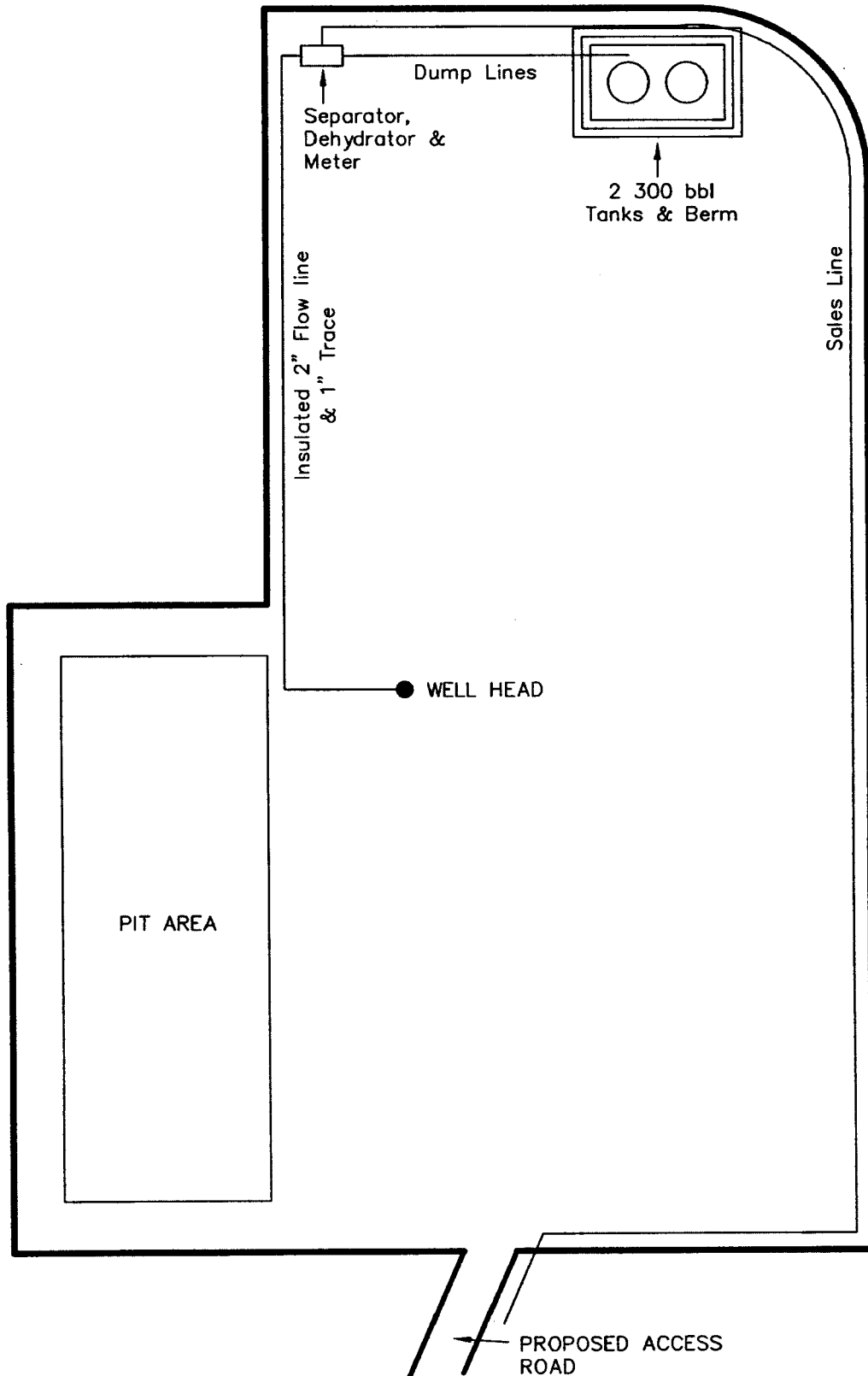
TYPICAL RIG LAYOUT - ARCHY BENCH 12-23-12-16



Section 16, T12S, R23E, S.L.B.&M.		Qtr/Qtr Location: SW NW	Footage Location: 2084' FNL 526' FWL
Date Surveyed: 5-21-05	Date Drawn: 6-1-05	Date Last Revision:	Timberline (435) 789-1365
Surveyed By: K.R.K.	Drawn By: C.B.T.	Scale: 1" = 50'	Land Surveying, Inc.
38 WEST 100 NORTH VERNAL, UTAH 84078			SHEET 5 OF 10

LIDURING RESOURCE

TYPICAL PRODUCTION LAYOUT - ARCHY BENCH 12-23-12-16



Section 16, T12S, R23E, S.L.B.&M.		Qtr/Qtr Location: SW NW	Footage Location: 2084' FNL 526' FWL
Date Surveyed: 5-21-05	Date Drawn: 6-1-05	Date Last Revision:	Timberline (435) 789-1365 Land Surveying, Inc. 38 WEST 100 NORTH VERNAL, UTAH 84078
Surveyed By: K.R.K.	Drawn By: C.B.T.	Scale: 1" = 50'	

SHEET
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OF 10



LEGEND

- = PROPOSED WELL LOCATION
- = EXISTING ROAD
- = EXISTING ROAD (TO BE IMPROVED)
- - - = PROPOSED ACCESS ROAD
- B-5460 = COUNTY ROAD CLASS & NUMBER

TOPOGRAPHIC MAP "A"

DATE SURVEYED: 05-21-05

DATE DRAWN: 06-03-05

SCALE: 1:150,000

DRAWN BY: T.D.H.

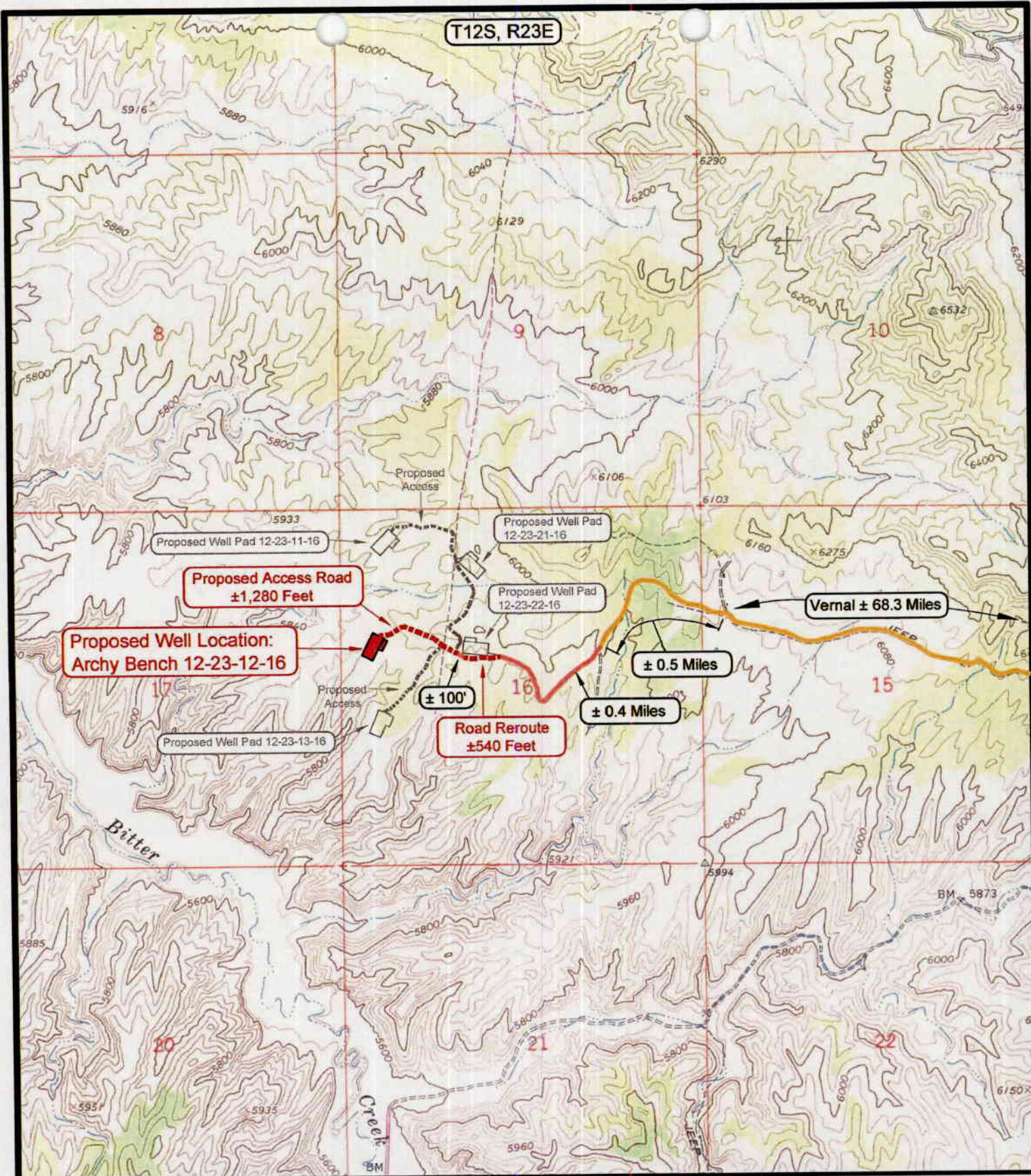
REVISED:

ENDURING RESOURCES

Archy Bench 12-23-12-16
SECTION 16, T12S, R23E, S.L.B.&M.
2084' FNL & 526' FWL

Timberline Land Surveying, Inc.
 38 West 100 North Vernal, Utah 84078
 (435) 789-1365

SHEET
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OF 10



LEGEND

- = EXISTING ROAD
- = EXISTING ROAD (TO BE IMPROVED)
- - - = PROPOSED ACCESS ROAD
- B-5460 = COUNTY ROAD CLASS & NUMBER

TOPOGRAPHIC MAP "B"

SCALE: 1" = 2000'

DRAWN BY: T.D.H.

DATE SURVEYED: 05-21-05

DATE DRAWN: 06-03-05

REVISED:

ENDURING RESOURCES

Archy Bench 12-23-12-16
SECTION 16, T12S, R23E, S.L.B.&M.
2084' FNL & 526' FWL

Timberline Land Surveying, Inc.

38 West 100 North Vernal, Utah 84078
 (435) 789-1365

SHEET
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OF 10

T12S, R23E

Proposed Well Location:
Archy Bench 12-23-12-16

HANGING ROCK 19-11

STATE M 32-16

DWR 15-16

DWR 14-16

DWR 16-16

Bitter

Creek

LEGEND

- | | |
|--------------------|--------------------------------|
| ⊘ = DISPOSAL WELL | ⊘ = WATER WELL |
| ● = PRODUCING WELL | ● = ABANDONED WELL |
| ● = SHUT IN WELL | ● = TEMPORARILY ABANDONED WELL |

TOPOGRAPHIC MAP "C"

DATE SURVEYED: 05-21-05

DATE DRAWN: 06-03-05

SCALE: 1" = 2000'

DRAWN BY: T.D.H

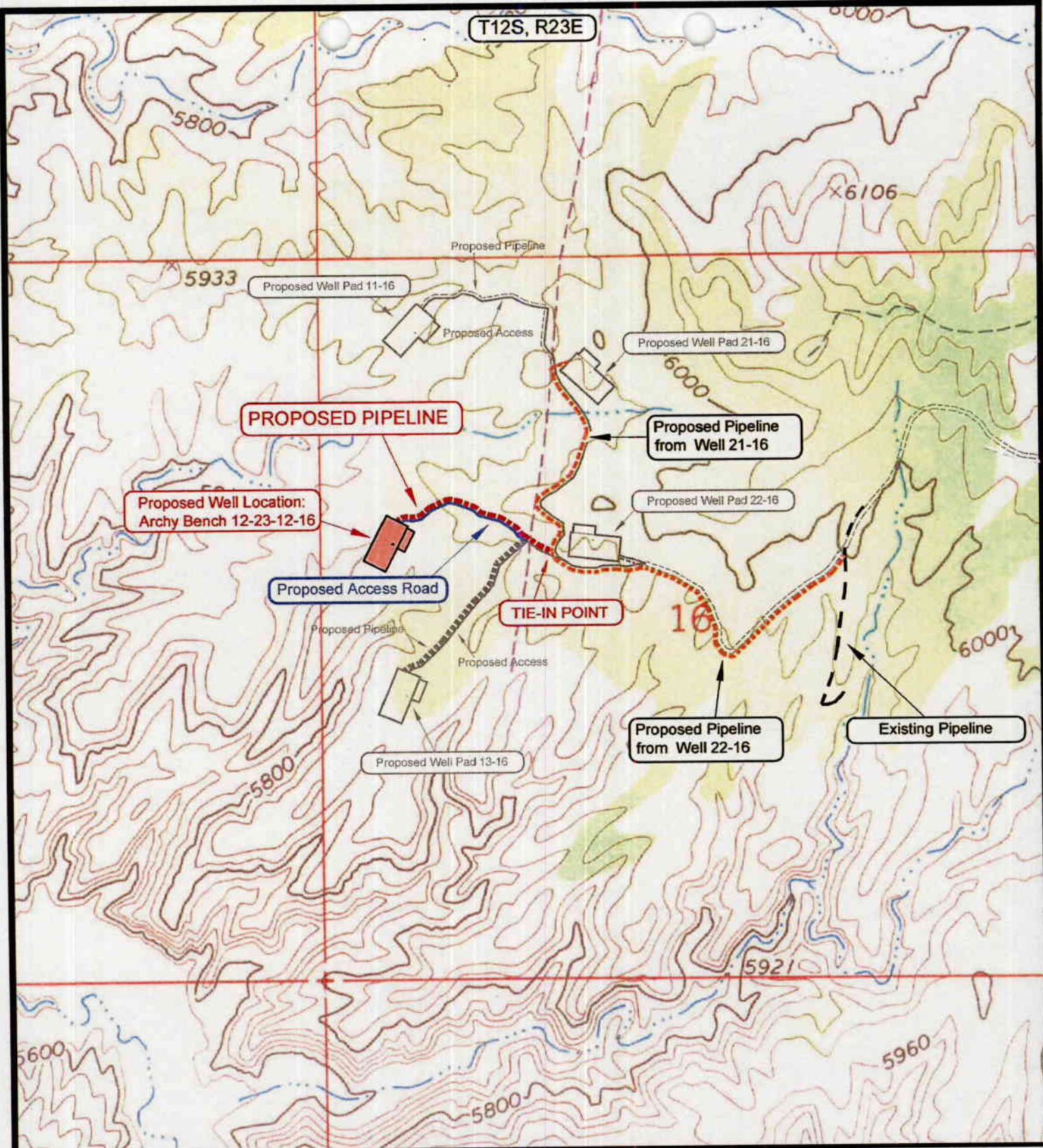
REVISED:

ENDURING RESOURCES

Archy Bench 12-23-12-16
SECTION 16, T12S, R23E, S.L.B.&M.
2084' FNL & 526' FWL

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SHEET
9
OF 10



APPROXIMATE PIPELINE LENGTH = 1,280 Feet

LEGEND

- = EXISTING PIPELINE
- = PROPOSED PIPELINE
- = PROPOSED ACCESS ROAD

TOPOGRAPHIC MAP "D"

SCALE: 1" = 1000'

DRAWN BY: T.D.H.

DATE SURVEYED: 05-21-05

DATE DRAWN: 06-03-05

REVISED:

ENDURING RESOURCES

Archy Bench 12-23-12-16
SECTION 16, T12S, R23E, S.L.B.&M.
2084' FNL & 526' FWL

Timberline Land Surveying, Inc.
 38 West 100 North Vernal, Utah 84078
 (435) 789-1385

SHEET
10
OF 10

WORKSHEET

APPLICATION FOR PERMIT TO DRILL

003

APD RECEIVED: 06/27/2005

API NO. ASSIGNED: 43-047-36797

WELL NAME: ARCHY BENCH 12-23-12-16

OPERATOR: ENDURING RESOURCES, LLC (N2750)

CONTACT: PHYLLIS SOBOTIK

PHONE NUMBER: 303-350-5114

PROPOSED LOCATION:

SWNW 16 120S 230E

SURFACE: 2084 FNL 0526 FWL

BOTTOM: 2084 FNL 0526 FWL

UINTAH

OIL SPRINGS (635)

LEASE TYPE: 3 - State

LEASE NUMBER: ML-48957

SURFACE OWNER: 3 - State

PROPOSED FORMATION: MVRD

COALBED METHANE WELL? NO

INSPECT LOCATN BY: / /

Tech Review	Initials	Date
Engineering	DKD	7/18/05
Geology		
Surface		

LATITUDE: 39.77515

LONGITUDE: -109.3549

RECEIVED AND/OR REVIEWED:

☒ Plat
☒ Bond: Fed[] Ind[] Sta[] Fee[]
 (No. 2100008031)
☒ Potash (Y/N)
☒ Oil Shale 190-5 (B) or 190-3 or 190-13
☒ Water Permit
 (No. 43-2195)
☒ RDCC Review (Y/N)
 (Date: _____)
☒ Fee Surf Agreement (Y/N)

LOCATION AND SITING:

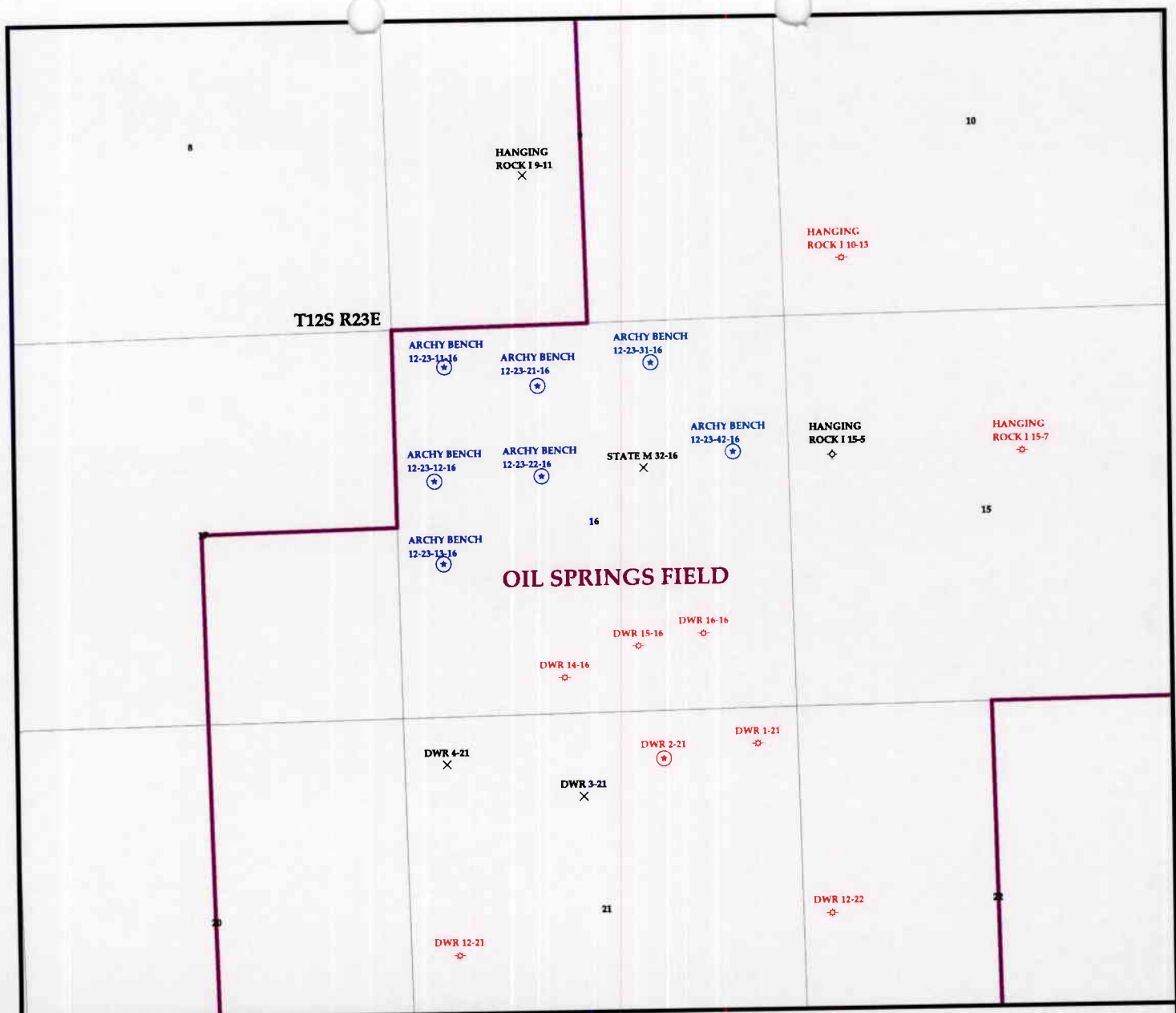
_____ R649-2-3.
 Unit _____
☒ R649-3-2. General
 Siting: 460 From Qtr/Qtr & 920' Between Wells
 _____ R649-3-3. Exception
 _____ Drilling Unit
 Board Cause No: _____
 Eff Date: _____
 Siting: _____
 _____ R649-3-11. Directional Drill

COMMENTS: Needs P.D.S.U (07-06-05)

STIPULATIONS: 1. Spacing Strip

2. STATEMENT OF BASIS

3 - Surface Csg Cont Strip



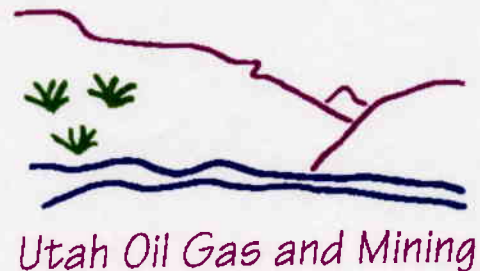
OPERATOR: ENDURING RES LLC (N2750)

SEC: 16 T. 12S R. 23E

FIELD: OIL SPRINGS (635)

COUNTY: UINTAH

SPACING: R649-3-2 / GENERAL SITING



Wells	Units.shp	Fields.shp
☆ GAS INJECTION	EXPLORATORY	ABANDONED
☆ GAS STORAGE	GAS STORAGE	ACTIVE
× LOCATION ABANDONED	NF PP OIL	COMBINED
☆ NEW LOCATION	NF SECONDARY	INACTIVE
☆ PLUGGED & ABANDONED	PENDING	PROPOSED
☆ PRODUCING GAS	PI OIL	STORAGE
● PRODUCING OIL	PP GAS	TERMINATED
☆ SHUT-IN GAS	PP GEOTHERML	
☆ SHUT-IN OIL	PP OIL	
× TEMP. ABANDONED	SECONDARY	
× TEST WELL	TERMINATED	
△ WATER INJECTION		
◇ WATER SUPPLY		
◇ WATER DISPOSAL		



PREPARED BY: DIANA WHITNEY
DATE: 28-JUNE-2005

ON-SITE PREDRILL EVALUATION
Division of Oil, Gas and Mining

OPERATOR: ENDURING RESOURCES, LLC
WELL NAME & NUMBER: ARCHY BENCH 12-23-12-16
API NUMBER: 43-047-36797
LEASE: ML-48957 FIELD/UNIT: OIL SPRINGS
LOCATION: 1/4, 1/4 SW/NW Sec: 16 TWP: 12S RNG: 23E 2084' FNL 526' FWL
LEGAL WELL SITING: 460 F SEC. LINE; 460 F 1/4, 1/4 LINE; 920 F ANOTHER WELL.
GPS COORD (UTM): 4403883 12S0640901 SURFACE OWNER: SITLA.

PARTICIPANTS

RICHARD POWELL (DOGM), DAVID W. HACKFORD (DOGM), KOLBY KAY (TIMBERLINE SURVEYING), DOUG HAMMOND (ENDURING), ONE DIRT CONTRACTOR.

REGIONAL/LOCAL SETTING & TOPOGRAPHY

SITE IS ON A GENTLY SLOPING RIDGE WHICH DRAINS SOUTHWARD TO BITTER CREEK APPROXIMATELY .85 MILES AWAY. THE AREA IS A PINYON JUNIPER FOREST TYPIFIED BY MODERATELY STEEP TO GRADUALLY SLOPED HILLS AND DRAINAGES ALL SLOPING IN A SOUTHWESTERLY DIRECTION TO BITTER CREEK. VERNAL, UTAH IS APPROXIMATELY 68.3 MILES TO THE NORTHWEST.

SURFACE USE PLAN

CURRENT SURFACE USE: WILDLIFE AND LIVESTOCK GRAZING.

PROPOSED SURFACE DISTURBANCE: LOCATION WILL BE 365' BY 250'. ACCESS ROAD WILL BE 1,280 FEET.

LOCATION OF EXISTING WELLS WITHIN A 1 MILE RADIUS: SEE ATTACHED MAP FROM GIS DATABASE.

LOCATION OF PRODUCTION FACILITIES AND PIPELINES: ALL PRODUCTION FACILITIES WILL BE ON LOCATION AND ADDED AFTER DRILLING WELL. PIPELINE WILL FOLLOW ACCESS ROAD.

SOURCE OF CONSTRUCTION MATERIAL: ALL CONSTRUCTION MATERIAL WILL BE BORROWED FROM SITE DURING CONSTRUCTION OF LOCATION.

ANCILLARY FACILITIES: NONE WILL BE REQUIRED.

WILL DRILLING AT THIS LOCATION GENERATE PUBLIC INTEREST OF CONCERNS? (EXPLAIN): UNLIKELY.

WASTE MANAGEMENT PLAN:

DRILLED CUTTINGS WILL BE SETTLED INTO RESERVE PIT. LIQUIDS FROM PIT WILL BE ALLOWED TO EVAPORATE. FORMATION WATER WILL BE CONFINED TO STORAGE TANKS. SEWAGE FACILITIES, STORAGE AND DISPOSAL WILL BE HANDLED BY COMMERCIAL CONTRACTOR. TRASH WILL BE CONTAINED IN TRASH BASKETS AND HAULED TO AN APPROVED LAND FILL.

ENVIRONMENTAL PARAMETERS

AFFECTED FLOODPLAINS AND/OR WETLANDS: NONE

FLORA/FAUNA: SAGEBRUSH, GREASEWOOD, PRICKLEY PEAR,
LITTLE OR NO GRASS, UTAH JUNIPER, PINYON. DEER, ELK, RODENTS, RAPTORS,
COYOTE, SONGBIRDS, RABBIT, BOBCAT, PRONGHORN.

SOIL TYPE AND CHARACTERISTICS: GRAVELLY LIGHT BROWN SANDY CLAY.

EROSION/SEDIMENTATION/STABILITY: VERY LITTLE NATURAL EROSION.
SEDIMENTATION AND STABILITY ARE NOT A PROBLEM AND LOCATION
CONSTRUCTION SHOULDN'T CAUSE AN INCREASE IN STABILITY OR EROSION
PROBLEMS.

PALEONTOLOGICAL POTENTIAL: NONE OBSERVED

RESERVE PIT

CHARACTERISTICS: 160' BY 60' AND EIGHT FEET DEEP.

LINER REQUIREMENTS (Site Ranking Form attached): A LINER AND FELT SUB-
LINER WILL BE REQUIRED FOR RESERVE PIT.

SURFACE RESTORATION/RECLAMATION PLAN

AS PER SITLA

SURFACE AGREEMENT: AS PER SITLA

CULTURAL RESOURCES/ARCHAEOLOGY: ARCHAEOLOGY STUDY HAS NOT BEEN DONE.

OTHER OBSERVATIONS/COMMENTS

THIS PREDRILL INVESTIGATION WAS CONDUCTED ON A HOT, CALM DAY.

ATTACHMENTS

PHOTOS OF THIS SITE WERE TAKEN AND PLACED ON FILE.

RICHARD POWELL
DOGM REPRESENTATIVE

7/06/05 11:45 AM
DATE/TIME

**Evaluation Ranking Criteria and Ranking Score
For Reserve and Onsite Pit Liner Requirements**

<u>Site-Specific Factors</u>	<u>Ranking</u>	<u>Site Ranking</u>
Distance to Groundwater (feet)		
>200	0	
100 to 200	5	
75 to 100	10	
25 to 75	15	
<25 or recharge area	20	<u>5</u>
Distance to Surf. Water (feet)		
>1000	0	
300 to 1000	2	
200 to 300	10	
100 to 200	15	
< 100	20	<u>0</u>
Distance to Nearest Municipal Well (feet)		
>5280	0	
1320 to 5280	5	
500 to 1320	10	
<500	20	<u>0</u>
Distance to Other Wells (feet)		
>1320	0	
300 to 1320	10	
<300	20	<u>0</u>
Native Soil Type		
Low permeability	0	
Mod. permeability	10	
High permeability	20	<u>20</u>
Fluid Type		
Air/mist	0	
Fresh Water	5	
TDS >5000 and <10000	10	
TDS >10000 or Oil Base Mud Fluid	15	
containing significant levels of hazardous constituents	20	<u>5</u>
Drill Cuttings		
Normal Rock	0	
Salt or detrimental	10	<u>0</u>
Annual Precipitation (inches)		
<10	0	
10 to 20	5	
>20	10	<u>0</u>
Affected Populations		
<10	0	
10 to 30	6	
30 to 50	8	
>50	10	<u>0</u>
Presence of Nearby Utility Conduits		
Not Present	0	
Unknown	10	
Present	15	<u>0</u>

Final Score 30 (Level I Sensitivity)

Sensitivity Level I = 20 or more: total containment is required.

Sensitivity Level II = 15-19: lining is discretionary.

Sensitivity Level III = below 15: no specific lining is required.





**DIVISION OF OIL, GAS AND MINING
APPLICATION FOR PERMIT TO DRILL
STATEMENT OF BASIS**

OPERATOR: ENDURING RESOURCES, LLC
WELL NAME & NUMBER: ARCHEY BENCH 12-23-12-16
API NUMBER: 43-047-36797
LOCATION: 1/4, 1/4 SW/NW Sec: 16 TWP: 12S RNG: 23E 2084' FNL 526' FWL

Geology/Ground Water:

Enduring proposes to set 2,000 feet of surface casing cemented to the surface. The base of the moderately saline water is estimated at 3,900 feet. A search of Division of Water Rights records shows no water wells within a 10,000 foot radius of the center of section 16. The surface formation at this location is the Uinta/Green River Formation transition. The Uinta Formation is made up of discontinuous sands interbedded with shales and are not expected to produce prolific aquifers. The Green River Formation is made up of interbedded limestones, shales and sandstones. Fresh water aquifers can be found in the Green River Formation and should be protected. The proposed surface casing should adequately protect any potentially useable aquifers.

Reviewer: Brad Hill **Date:** 07-12-05

Surface:

The predrill investigation of the surface was performed on 7/06/05. This site is on State surface, with State minerals, and appears to be the best site for a location in the drilling window. SITLA and DWR were notified of this investigation. DWR representative Chris Wood was present, but no SITLA representative was present. Mr. Wood stated no wildlife concerns with drilling in this area. Mr. Hammond agreed to reroute the drainage around the northeast corner of the site as necessary to avoid runoff entering the location.

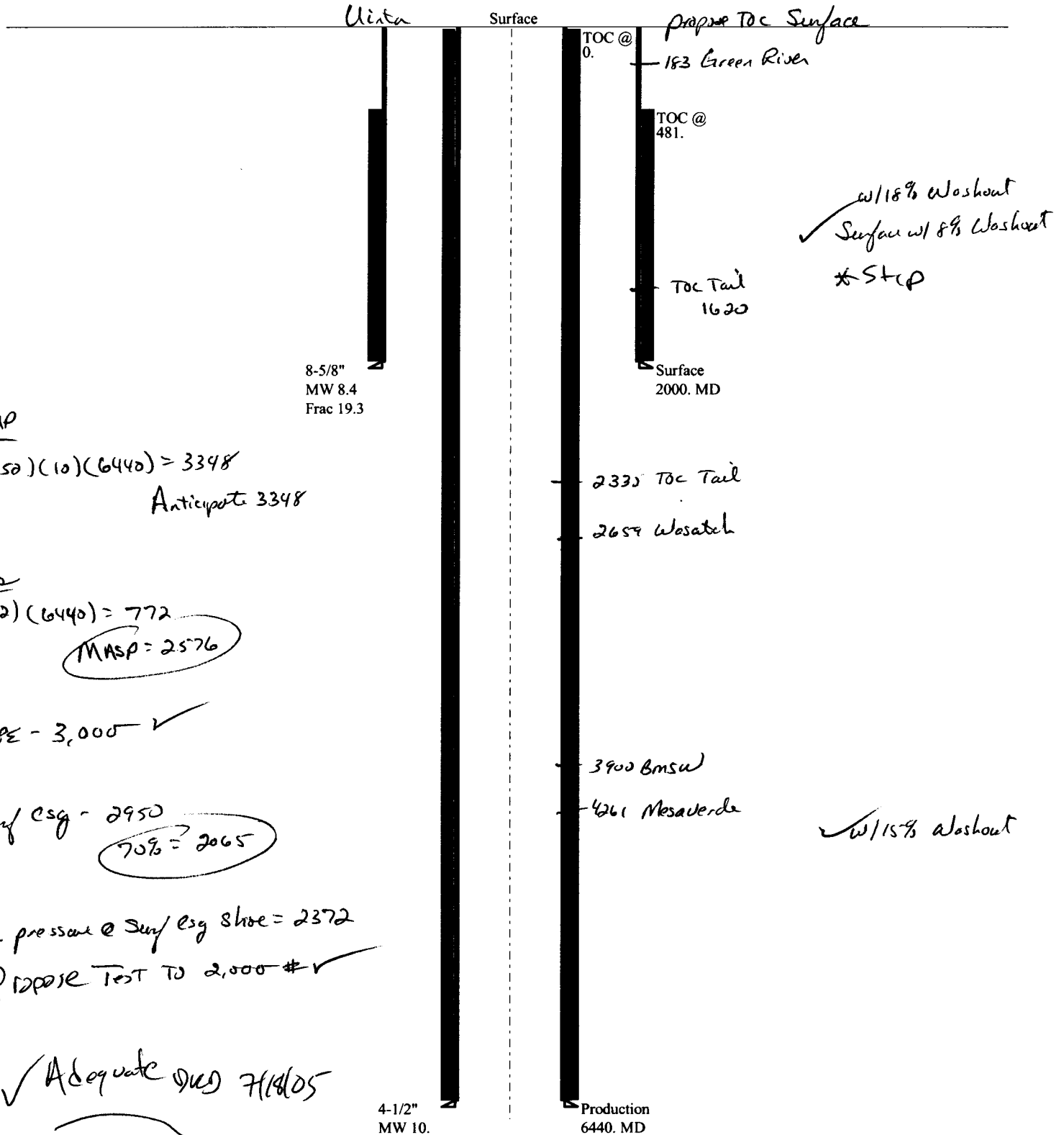
Reviewer: Richard Powell **Date:** 7/06/2005

Conditions of Approval/Application for Permit to Drill:

1. A synthetic liner with a minimum thickness of 12 mils with a felt subliner shall be properly installed and maintained in the reserve pit.

05 Enduring Archy Bench 1 23-12-16

Casing Schematic



Well name:	07-05 Enduring Archy Bench 12-23-12-16	
Operator:	Enduring Resources, LLC	Project ID:
String type:	Surface	43-047-36797
Location:	Uintah County	

Design parameters:
Collapse

Mud weight: 8.400 ppg
Design is based on evacuated pipe.

Minimum design factors:
Collapse:

Design factor 1.125

Burst:

Design factor 1.00

Environment:

H2S considered? No
Surface temperature: 75 °F
Bottom hole temperature: 103 °F
Temperature gradient: 1.40 °F/100ft
Minimum section length: 350 ft

Cement top: 481 ft

Burst

Max anticipated surface pressure: 1,760 psi
Internal gradient: 0.120 psi/ft
Calculated BHP 2,000 psi

No backup mud specified.

Tension:

8 Round STC: 1.80 (J)
8 Round LTC: 1.80 (J)
Buttress: 1.60 (J)
Premium: 1.50 (J)
Body yield: 1.50 (B)

Tension is based on buoyed weight.
Neutral point: 1,748 ft

Non-directional string.

Re subsequent strings:

Next setting depth: 6,440 ft
Next mud weight: 10.000 ppg
Next setting BHP: 3,345 psi
Fracture mud wt: 19.250 ppg
Fracture depth: 2,000 ft
Injection pressure 2,000 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	2000	8.625	24.00	J-55	ST&C	2000	2000	7.972	96.3

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	873	1370	1.570	2000	2950	1.48	42	244	5.82 J

Prepared by: Clinton Dworshak
Utah Div. of Oil & Mining

Phone: 801-538-5280
FAX: 801-359-3940

Date: July 13, 2005
Salt Lake City, Utah

Remarks:

Collapse is based on a vertical depth of 2000 ft, a mud weight of 8.4 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.

Well name:	07-05 Enduring Archy Bench 12-23-12-16	
Operator:	Enduring Resources, LLC	Project ID:
String type:	Production	43-047-36797
Location:	Uintah County	

Design parameters:
Collapse

Mud weight: 10.000 ppg
Design is based on evacuated pipe.

Minimum design factors:
Collapse:

Design factor 1.125

Burst:

Design factor 1.00

Environment:

H2S considered? No
Surface temperature: 75 °F
Bottom hole temperature: 165 °F
Temperature gradient: 1.40 °F/100ft
Minimum section length: 1,500 ft

Cement top: Surface

Burst

Max anticipated surface pressure: 2,573 psi
Internal gradient: 0.120 psi/ft
Calculated BHP 3,345 psi

No backup mud specified.

Tension:

8 Round STC: 1.80 (J)
8 Round LTC: 1.80 (J)
Buttress: 1.60 (J)
Premium: 1.50 (J)
Body yield: 1.50 (B)

Non-directional string.

Tension is based on buoyed weight.

Neutral point: 5,477 ft

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	6440	4.5	11.60	N-80	LT&C	6440	6440	3.875	149.3

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	3345	6350	1.898	3345	7780	2.33	64	223	3.51 J

Prepared by: Clinton Dworshak
Utah Div. of Oil & Mining

Phone: 801-538-5280
FAX: 801-359-3940

Date: July 13, 2005
Salt Lake City, Utah

Remarks:

Collapse is based on a vertical depth of 6440 ft, a mud weight of 10 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.



Enduring Resources

475 17th Street Suite 1500 Denver Colorado 80202
Telephone 303 573-1222 Fax 303 573 0461

July 27, 2005

Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P. O. Box 145801
Salt Lake City, Utah 84114-5801

Attn.: Ms. Diana Whitney

RE: Cultural Resource Inventory Report # MOAC 05-227
Paleontological Reconnaissance Report # MOAC 05-228
Access Road and Pipelines Sec 16 T12S-R23E
Uintah County, Utah


Dear Ms. Whitney:

Enclosed are the referenced reports for the following proposed wells.

Archy Bench #12-23-11-16	Archy Bench #12-23-21-16	Archy Bench #12-23-42-16
Archy Bench #12-23-12-16	Archy Bench #12-23-22-16	
Archy Bench #12-23-13-16	Archy Bench #12-23-31-16	

If any questions arise or additional information is required, please contact me at 303-350-5114.

Sincerely,


Phyllis Sobotik
Regulatory Specialist

/ps
Enclosures:

RECEIVED
AUG 01 2005
DIV. OF OIL, GAS & MINING

From: Ed Bonner
To: Whitney, Diana
Date: 8/25/2005 10:37:49 AM
Subject: Well Clearance

The following wells have been given cultural resource clearance by the Trust Lands Cultural Resources Group:

Enduring Resources, LLC

Archy Bench 12-23-11-16
Archy Bench 12-23-12-16 ✓
Archy Bench 12-23-13-16
Archy Bench 12-23-21-16
Archy Bench 12-23-22-16
Archy Bench 12-23-31-16
Archy Bench 12-23-42-16

Medallion Exploration

Atchee State 20-12-25
Atchee State 1-29-12-25
Atchee State 2-29-12-25
Atchee Ridge 32-12-25
Seep Canyon State 30-12-25

National Fuel Corporation

NFC State Duncan #14-28
NFC Horse Point State #11-6
NFC Westwater State #22-32

Westport Oil & Gas Company

State 920-36J
State 920-36K
State 920-36L
State 920-36M
State 920-36N

If you have any questions regarding this matter please give me a call.

CC: Garrison, LaVonne; Hill, Brad; Hunt, Gil

**State of Utah****Department of
Natural Resources**

MICHAEL R. STYLER
Executive Director

**Division of
Oil, Gas & Mining**

JOHN R. BAZA
Division Director

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

August 25, 2005

Enduring Resources, LLC
475 17th St., Suite 1500
Denver, CO 80202

Re: Archy Bench 12-23-12-16 Well, 2084' FNL, 526' FWL, SW NW,
Sec. 16, T. 12 South, R. 23 East, Uintah County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. § 40-6-1 *et seq.*, Utah Administrative Code R649-3-1 *et seq.*, and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-047-36797.

Sincerely,

A handwritten signature in black ink, appearing to read "Gil Hunt".
for Gil Hunt
Associate Director

pab
Enclosures

cc: Uintah County Assessor
SITLA

Operator: Enduring Resources, LLC
Well Name & Number Archy Bench 12-23-12-16
API Number: 43-047-36797
Lease: ML-48957

Location: SW NW Sec. 16 T. 12 South R. 23 East

Conditions of Approval

1. **General**

Compliance with the requirements of Utah Admin. R. 649-1 *et seq.*, the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for Permit to Drill.

2. **Notification Requirements**

The operator is required to notify the Division of Oil, Gas and Mining of the following actions during drilling of this well:

- 24 hours prior to cementing or testing casing
- 24 hours prior to testing blowout prevention equipment
- 24 hours prior to spudding the well
- within 24 hours of any emergency changes made to the approved drilling program
- prior to commencing operations to plug and abandon the well

The following are Division of Oil, Gas and Mining contacts and their work telephone numbers (please leave a voice mail message if the person is not available to take the call):

- Dan Jarvis at (801) 538-5338
- Carol Daniels at (801) 538-5284 (spud)

3. **Reporting Requirements**

All required reports, forms and submittals will be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

4. Compliance with the State of Utah Antiquities Act forbids disturbance of archeological, historical, or paleontological remains. Should archeological, historical or paleontological remains be encountered during your operations, you are required to immediately suspend all operations and immediately inform the Trust Lands Administration and the Division of State History of the discovery of such remains.

5. Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis. (Copy Attached)

6. This proposed well is located in an area for which drilling units (well spacing patterns) have not been established through an order of the Board of Oil, Gas and Mining (the "Board"). In order to avoid the possibility of waste or injury to correlative rights, the operator is requested, once the well has been drilled, completed, and has produced, to analyze geological and engineering data generated therefrom, as well as any similar data from surrounding areas if available. As soon as is practicable after completion of its analysis, and if the analysis suggests an area larger than the quarter-quarter section upon which the well is located is being drained, the operator is requested to seek an appropriate order from the Board establishing drilling and spacing units in conformance with such analysis by filing a Request for Agency Action with the Board.
7. Surface casing shall be cemented to the surface.

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

1. TYPE OF WELL OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER _____		5. LEASE DESIGNATION AND SERIAL NUMBER: ML 48957
2. NAME OF OPERATOR: Enduring Resources, LLC		6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A
3. ADDRESS OF OPERATOR: 375 17th Street, Suite 1500 CITY Denver STATE CO ZIP 80202		7. UNIT or CA AGREEMENT NAME: N/A
PHONE NUMBER: (303) 350-5114		8. WELL NAME and NUMBER: Archy Bench 12-23-12-16
4. LOCATION OF WELL FOOTAGES AT SURFACE: 2084' FNL - 6526' FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: SWNW 16 12S 23E S		9. API NUMBER: 4304736797
COUNTY: Uintah STATE: UTAH		10. FIELD AND POOL, OR WILDCAT: Oil Springs

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA


TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: 4/20/2006	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
<input type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion:	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input checked="" type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input checked="" type="checkbox"/> OTHER: Change Plans
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Change Well Type:

FROM: Single Zone

TO: Multi-Zone

NAME (PLEASE PRINT) <u>Alvin R. (Al) Arlian</u>	TITLE <u>Landman - Regulatory Specialist</u>
SIGNATURE 	DATE <u>4/20/2006</u>

(This space for State use only)

RECEIVED

APR 26 2006

DIV. OF OIL, GAS & MINING

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

5. LEASE DESIGNATION AND SERIAL NUMBER:

ML-48957

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

n/a

7. UNIT or CA AGREEMENT NAME:

n/a

8. WELL NAME and NUMBER:

Archy Bench 12-23-12-16

9. API NUMBER:

4304736797

10. FIELD AND POOL, OR WILDCAT:

No name

1. TYPE OF WELL

OIL WELL ☐

GAS WELL ☒

OTHER

2. NAME OF OPERATOR:

Enduring Resources, LLC

3. ADDRESS OF OPERATOR:

475 17th Street, Suite 1500 CITY Denver

STATE CO ZIP 80202

PHONE NUMBER:

(303) 350-5114

4. LOCATION OF WELL

FOOTAGES AT SURFACE: 2084' FNL - 526' FWL

COUNTY: Uintah

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: SWNW 16 12S 23E S

STATE:

UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

TYPE OF ACTION

☒ NOTICE OF INTENT
(Submit in Duplicate)

Approximate date work will start:

6/28/2006

☐ SUBSEQUENT REPORT
(Submit Original Form Only)

Date of work completion:

☐ ACIDIZE

☐ ALTER CASING

☐ CASING REPAIR

☐ CHANGE TO PREVIOUS PLANS

☐ CHANGE TUBING

☐ CHANGE WELL NAME

☐ CHANGE WELL STATUS

☐ COMMINGLE PRODUCING FORMATIONS

☐ CONVERT WELL TYPE

☐ DEEPEN

☐ FRACTURE TREAT

☐ NEW CONSTRUCTION

☐ OPERATOR CHANGE

☐ PLUG AND ABANDON

☐ PLUG BACK

☐ PRODUCTION (START/RESUME)

☐ RECLAMATION OF WELL SITE

☐ RECOMPLETE - DIFFERENT FORMATION

☐ REPERFORATE CURRENT FORMATION

☒ SIDETRACK TO REPAIR WELL

☐ TEMPORARILY ABANDON

☐ TUBING REPAIR

☐ VENT OR FLARE

☐ WATER DISPOSAL

☐ WATER SHUT-OFF

☒ OTHER: Request for APD
Extension

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Enduring Resources, LLC respectfully request an extension to the expiration date of this Application for Permit to Drill

FROM: 8-25-2006

TO: 8-25-2007

Approved by the
Utah Division of
Oil, Gas and Mining

Date: 07-13-06

By: [Signature]

COPY SENT TO OPERATOR
Date: 10-11-06
Initials: RM

NAME (PLEASE PRINT)

Alvin R. (Al) Arlian

TITLE

Landman - Regulatory Specialist

SIGNATURE

DATE

6/28/2006

(This space for State use only)

RECEIVED

JUL 12 2006

DIV. OF OIL, GAS & MINING

**Application for Permit to Drill
Request for Permit Extension
Validation**

(this form should accompany the Sundry Notice requesting permit extension)

API: 4304736797
Well Name: Archy Bench 12-23-12-16
Location: 2084' FNL - 526' FWL , SWNW, Sec 16, T12S-R23E
Company Permit Issued to: Enduring Resources, LLC
Date Original Permit Issued: 8/25/2005

The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision.

Following is a checklist of some items related to the application, which should be verified.

If located on private land, has the ownership changed, if so, has the surface agreement been updated? Yes ☐ No ☐

Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location? Yes ☐ No ☒


Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well? Yes ☐ No ☒

Have there been any changes to the access route including ownership, or right-of-way, which could affect the proposed location? Yes ☐ No ☒

Has the approved source of water for drilling changed? Yes ☐ No ☒

Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation? Yes ☐ No ☒

Is bonding still in place, which covers this proposed well? Yes ☒ No ☐



Signature

6/28/2006

Date

Title: Landman - Regulatory Specialist

Representing: Enduring Resources, LLC

**RECEIVED
JUL 12 2006**

DIV. OF OIL, GAS & MINING

CONFIDENTIAL

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

5. LEASE DESIGNATION AND SERIAL NUMBER:
ML-48957

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
n/a

7. UNIT or CA AGREEMENT NAME:
n/a

8. WELL NAME and NUMBER:
Archy Bench 12-23-12-16

9. API NUMBER:
4304736797

10. FIELD AND POOL, OR WILDCAT:
No name

1. TYPE OF WELL OIL WELL ☐ GAS WELL ☒ OTHER _____

2. NAME OF OPERATOR:
Enduring Resources, LLC

3. ADDRESS OF OPERATOR:
475 17th Street, Suite 1500 CITY Denver STATE CO ZIP 80202

PHONE NUMBER:
(303) 350-5114

4. LOCATION OF WELL

FOOTAGES AT SURFACE: 2084' FNL - 526' FWL

COUNTY: Uintah

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: SWNW 16 12S 23E S

STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: _____	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
<input type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input checked="" type="checkbox"/> OTHER: Request for APD Extension
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Enduring Resources, LLC respectfully request an extension to the expiration date of this Application for Permit to Drill

FROM: 7/13/2007
TO: 7/13/2008

Approved by the
Utah Division of
Oil, Gas and Mining

Date: 07-16-07
By: [Signature]

NAME (PLEASE PRINT) Evette Bissett

TITLE Regulatory Affairs Assistant

SIGNATURE [Signature]

DATE 7/10/2007

(This space for State use only)

RECEIVED

JUL 13 2007

DIV. OF OIL, GAS & MINING

**Application for Permit to Drill
Request for Permit Extension
Validation**

(this form should accompany the Sundry Notice requesting permit extension)

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Emilio Bissett
Signature

7/10/2007
Date

Title: Regulatory Affairs Assistant

Representing: Enduring Resources, LLC

RECEIVED

JUL 13 2007

DIV. OF OIL, GAS & MINING



JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

July 23, 2008

Al Arlian
Enduring Resources LLC
475 17th St. Ste. 1500
Denver, CO 80202

Re: APD Rescinded – Archy Bench 12-23-12-16 Sec. 16, T.12S, R. 23E
Uintah County, Utah API No. 43-047-36797

Dear Mr. Arlian:

The Application for Permit to Drill (APD) for the subject well was approved by the Division of Oil, Gas and Mining (Division) on August 25, 2005. On July 13, 2006 and July 16, 2007, the Division granted a one-year APD extension. No drilling activity at this location has been reported to the division. Therefore, approval to drill the well is hereby rescinded, effective July 23, 2008.

A new APD must be filed with this office for approval prior to the commencement of any future work on the subject locations.

If any previously unreported operations have been performed on this well location, it is imperative that you notify the Division immediately.

Sincerely,

Diana Mason
Environmental Scientist

cc: Well File
SITLA, Ed Bonner